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SURGERY OF THE TEMPOROMANDIBULAR ARTICULATION.*

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The proximity of the temporomandibular joint to the middle and external ear makes it of particular interest to the otologist. The fact that it is so frequently involved in diseases of the tonsils and of the peritonsillar structures and in dento-alveolitis makes it of great importance to the laryngologist.

It is not unusual for patients to come complaining of sore throat with a disturbance of occlusion and feeling that the whole trouble is in the throat, when an x-ray picture of the temporomandibular joint will show a collection of fluid between the condyle and the socket. This condition may be secondary to a throat lesion or the result of a focus of infection in some other part of the body. In our experience the patient usually refers the trouble to the ear; but the x-ray pictures in the presence of an apparently normal ear, demonstrate the trouble to be in the temporomandibular joint.

It is not our intention to review the surgery of the temporomandibular joint. Murphy and Kreuscher[1] have recently published a comprehensive review of the matter and we anticipate you are familiar with this report. Following such a comprehensive and exhaustive treatment of the subject it would be a waste of your time to again have the matter reviewed. Consequently, we are going to confine the paper to a report of several cases with trouble in the temporomandibular joint which we have had during the past year and which have presented some very unusual features.

*Read before the American Academy of Ophthalmology and Oto-Laryngology, Memphis, Tenn., Dec. 11, 1916.

Case 1. A case of bilateral complete true bony ankylosis of the temporomandibular articulation which was either congenital or acquired immediately after birth.

The case which we have to report was one of both true and false ankylosis, in that there was an osseous ankylosis of the joint itself, the true ankylosis, and in addition to this cicatricial tissue between the neck and ramus of the bone and the surrounding tissues and between the coronoid process, the zygoma and the neighboring structures, producing a false ankylosis. In our experience almost every case of true ankylosis has associated with it a false ankylosis.

The condition in which the mandible cannot be moved apart from the maxilla a normal distance is known as ankylosis. Brophy[2] quotes Blair's statistics and states that they are in accordance with his own observations. In his series trauma was the most common single cause. Nearly 50 per cent of all cases were due to this factor. A blow or a fall on the chin was the most frequent single trauma. He places scarlatina as the second factor causing ankylosis. Suppuration following this disease accounts for about 20 per cent of the cases. The following diseases play a part in the order named: Otitis media, dento-alveolar abscess, typhoid fever, pneumonia, measles, variola, diphtheria and rheumatoid arthritis.

So-called congenital temporomandibular ankylosis is very unusual, also that due to trauma at birth or during delivery. The prevalence of ankylosis of the mandible during childhood appears logical when we consider that accidents and many of the infectious diseases to which it is due are more prevalent during the early period of life.

Ankylosis of the joint may appear soon after the trauma or many months later.

The obstetrical forceps may cause fracture of the base of the cranium or of the mandible near the joint in the new-born and ankylosis may follow. Such cases may be mistaken for congenital ankylosis of the mandible.

A. E. White, female, six years of age. Referred by Dr. J. D. Cantwell, of Davenport, Iowa.

Entrance complaint: Lower jaw trouble.

The child has had the mandible retracted since birth and has never been able to open the mouth at any time more than one-eighth of an inch. Early in life the child was not able to nurse properly, and the mother attempted to force the mouth open by using her finger as a wedge. In this she was not successful.

The mother was a bleeder and during the birth of the two preceding children, she had had a great deal of trouble, and at the last delivery, almost died. During the delivery of the child under consideration, owing to very poor heart action and very little strength and after prolonged labor, it was necessary to apply forceps.

The attending physician discovered the ankylosis right after birth. He examined the child at the time of birth and his impression at that time was that the trouble was a congenital affair. During the first eight months of the child's life she cried almost continuously. She had mumps when four years of age, and measles at five.

Examination: Mandible retracted and ankylosed. Amount of movement of mandible enough to clear the teeth about one-eighth of an inch. The child throughout her life has never been able to insert even the tip of the tongue between the incisor teeth. The angles of the jaw are laterally very prominent and there are deep indentations inferiorly just anterior to the angles. The mandible is very poorly developed and there is an overhanging bite of fully three-fourths of an inch.

The skull, bones of the face and superior maxilla are well developed.

The teeth are reported upon as follows by Dr. Fenton: "Upper lateral temporary incisors not present. Radiographs show permanent lateral incisors in alveolar process. Upper temporary right and left cuspids badly decayed with pulps dead. Lower left temporary lateral not present."

X-ray examination of the mandible: Unfortunately prints from these x-ray plates do not show the changes well. These can only be seen properly by a stereoscopic examination.

Right mandible: Body very thin, so much so that anteriorly there is only a paper plate of bone between the unerupted teeth and the margin of the jaw. The coronoid process appears with the apex above the upper margin of the zygoma. In front of the angle of the jaw, the body is bent obliquely downward. Just in front of the angle is the first permanent molar; above it high up in the ramus, really in the body of the coronoid process, is the second molar bud. The condyle seems to be crushed, the top is blunt and in the socket. The eminentia articularis which can hardly be seen is apparently flattened.

Left mandible: Appearance of body, ramus and coronoid process the same as the right. The condyle seems fractured, pushed down and back, being higher and further back than normal. Condyle fits into a square socket.

Diagnosis: Fracture of the neck of the condyle with crushing of the condyle on each side. Fracture of the angle on each side with mandibular bilateral true bony ankylosis.

Operation: Resection of the neck of the condyle following the procedure as described by Murphy in 1902, with resection of the coronoid process of the left mandible. Under ether anesthesia, the joint was exposed by making an incision one and one-eighth inches long beginning just in front of the ear and extending along the superior border of the zygoma. From the anterior end of this incision a short incision about one-half an inch long was made upward and forward so as to avoid injuring the temporal and orbicular branches of the facial nerve. At the posterior end of the incision a second incision perpendicular to the first, about two inches long was made. The edges of the wound were drawn downward, the lower lip being displaced down below the lower border of the zygoma. The tissues were displaced downward until the neck of the condyle was exposed. The skin and the tissues in the lower part of the wound could be tightly retracted using a blunt retractor without injuring in the least the facial nerve. The articulation was fully exposed and no evidence of a joint could be discovered, the head of the mandible seeming to fuse with the socket in the temporal bone. Using a wedge between the jaws to tell when there was any loosening of the joint, the neck of the condyle was attacked with chisel and hammer. A v-shaped groove was chiselled across the neck and pieces of bone removed with small rongeurs. This was continued until the wedge indicated that the bone was divided. The wedge was used by Dr. Fenton. It was especially constructed of very dense wood and was used by him as a pry to tell when we had a movable mandible. When the mandible was loosened, using rongeurs, the condyle and the upper part of the neck were removed. No protector was used for the internal maxillary artery; none seemed to be necessary. The small vessels were ligated and the hemorrhage controlled with hot water and adrenalin.

The next step was the preparation of the fascial flap. The triangular flap of skin outlined by the incision was elevated. A u-shaped flap of fascia and muscle one and one-half inches wide and two and one-half inches long having its base at the upper margin of the zygoma was elevated from the surface of the temporal muscle. The flap was freed from above downward; it was left attached to the zygoma, folded down into the wound, the lower end being tucked down underneath the upper margin of the ramus

of the mandible. The flap was held in position by means of two catgut sutures, one placed at the anterior-inferior angle, and one at the posterior-inferior angle of the flap. The coronoid process which was underneath the zygoma was found bound tightly to the zygoma and it was exsected before the flap was placed in position. The jaws were now widely separated by Dr. Fenton, using a wedge and a plastic gutta percha wedge was placed between the teeth of the right side and fixed in position. This was done to prevent the upper end of the ramus of the jaw from pressing the flap and causing necrosis. The skin wound was closed, tincture of iodin applied to the wound and no other dressing was used. This operation was performed on August 6, 1916.

On August 23, 1916, a similar operation was performed upon the left side. So far as we could determine there was no involvement of any of the branches of the facial nerve following either operation.

About three weeks following the operation upon the right side there was some infection underneath the skin on that side. The skin was incised and a very slight amount of pus escaped.

The healing of the left side was uneventful. Following the operation upon the left side the teeth were held apart about one and one-half inches by the two gutta percha wedges which Dr. Fenton had placed, one on the right, and one on the left side.

It was interesting to watch the little child lie in bed, protrude her tongue, draw it in and protrude it again. It was an amusing thing to the child because she had never been able to even insert the tongue between the teeth. The mother said she had never seen the child's tongue before.

On August 30, 1916, that is one week following the operation upon the left side, Dr. Fenton removed the two wedges of gutta percha from between the teeth. At this time the patient could move the jaw nicely, so as to open the mouth one and one-half cms. The mouth could be shut tightly. The jaws could be closed so that the occlusion was fairly good. At this time Dr. Fenton began daily passive exercises, using a wedge to pry the mouth open. These exercises were continued for two months, being given daily. At this time the patient went home. The patient could open and close the mouth finely. The opening was about two-thirds that of the normal.

In connection with the operation for ankylosis of the temporomandibular articulation we would like to make one point, namely, always make the fascial flap much longer than it seems necessary in

order that it may be tucked down in the wound without any tension on its attachment to the zygoma.

Case 2. Ununited fracture of the body of the mandible on the right side anterior to the angle. Healed fracture of the neck on the left side with true bony ankylosis.

H. L., white, male, fifty years of age, came under our observation on August 22, 1916, because of ununited fracture of the right side of the mandible with inability to move the mandible.

On April 23, 1916, the patient was kicked upon the right side of the lower jaw by a horse. There was a comminuted fracture anterior to the angle. This was wired at the time.

Examination showed that the fractured ends of the bone on the right side were widely separated. The posterior fragment extended laterally beyond the anterior. There was nothing about the fracture to suggest why the left side of the mandible was immobile and why the jaw was kept in the open position. Inquiry failed to reveal any history of injury on the left side.

X-ray examination: Right side, fluid in the temporomandibular socket. The margins of the fragments were widely separated. Left side, an old fracture of the neck was discovered.

With this patient we felt that we had to deal with a very difficult problem indeed. This patient had come to us because of an ununited fracture on the right side. In order to get a good result here we felt that it was necessary to bring the parts in apposition, hold them there by some appliance, keep the mandible at rest until healing took place.

We had discovered also a bony true ankylosis on the left side. In order to get a good result here we thought it would be necessary to exsect the condyle, make a fascial flap and then exercise by passive motion this new joint for a number of weeks. The matter was explained to the patient and we advised, first, the correction of the ankylosed joint. This to be followed weeks later, if necessary, by a correction of the ununited fracture.

The operation previously described was performed upon the left side. One week later, the exercise of the mandible with the wedge was begun.

One week following the operation when the gutta percha was taken out, the patient had good occlusion. The motion of the mandible was a little over one-half inch. The passive motion was continued for five minutes daily and continued for three or four weeks, at the end of which time the patient could open and close his mouth in a normal manner.

Following the exsection of the neck on the left side the pieces at the point of the old fracture were brought in fairly good apposition. Much to our surprise without any operative procedure or appliance being applied to the point of fracture and with the daily passive exercises in order to get motion of the joint, the ununited fracture healed, giving the patient a fairly good result without a second operation, to us a most unusual condition.

Case 3. A case of bilateral forward dislocation of the mandible of almost five months' standing reduced by manipulation.

The interesting thing in connection with this case is the length of time that the dislocation existed before it was reduced. The dislocation occurred in September, 1915. At that time the family physician, Dr. Doering, of Fort Madison, Iowa, wrote and stated that he had a patient with a double dislocation of the mandible and he would like to have her come for treatment right away. For some reason or other the patient postponed her visit to us until a period of almost five months. We had come to the conclusion that the patient did not have a dislocation of the mandible because we could not conceive of a patient with a condition like this not having something done to correct it.

What was our surprise when at the end of this time the patient presented herself at our office with the open mouth and all of the characteristic symptoms of a bilateral dislocation of the mandible.

Brophy[3] reports that Hay successfully reduced a dislocation after twenty-three days; A. Cooper and Stromeyer after forty-two days; Hutchinson, sixty days; Demarguay, eighty-seven days; Donovan, ninety-eight days; Milton, one hundred and fourteen days; Pollock, one hundred and twenty days; Nichor and Gosselin, one hundred and thirty days; Golding, one hundred and thirty-six days, and McGraw[4] has corrected a bilateral dislocation of four months' standing. Our patient had the double dislocation of almost five months' standing at the time of the operation.

The patient, M. R., white, female, thirty-three years of age. In September, 1915, while yawning, she found that the lower jaw remained immobile in the open position and it has remained so since. It was painful at the time and remained so for a few days. Since then there has been no pain, but the patient has not been able to close the mouth. Naturally, the patient could not bite or chew. Attempts were made to replace the dislocation before the patient came under our care, but these were unsuccessful. She presented the typical facies of a bilateral dislocation of the mandible. The inferior incisors protruded one centimeter beyond the superior.

X-ray examination: The right side shows the condyle dislocated forward underneath the zygoma in the zygomatic fossa. The protrusion of the whole mandible is nicely shown.

The patient was able to open the mouth three centimeters. Anterior to the ear was a depression formerly occupied by the condyle. The condyles could not be felt as they had slipped forward underneath the zygoma in the zygomatic fossa. Malocclusion of the third degree. No deviation to the right or left.

Operation: January 31, 1916. Ether anesthesia with a preliminary injection of morphin. Under deep anesthesia an effort was made to replace the dislocation by placing between the molar teeth a rubber wedge containing an iron core, and exerting pressure upon the symphysis upward. This was not successful. The condyles were not moved in the least.

Over the zygoma of the right side an horizontal incision through skin and fascia down to the bone. Incision posteriorly extending slightly upward, the length of the incision being two inches. The incision extended down to the bone. The zygoma was separated from the malar bone anteriorly. The posterior incision through the zygoma was made as far back as possible, using a Gigli saw. An attempt was made to leave the zygoma attached to the masseter muscle when it was turned down, but in this instance the piece of bone fell off on the floor and was lost. The masseter muscle was turned down and the condyle exposed in the zygomatic fossa. Using a wedge, and using the base of the skull as a fulcrum, applying the point of the wedge to the condyle and also exerting pressure upon the symphysis, the condyle was forced back in position.

The same operation was performed upon the left side, except in this instance the zygoma was not lost but remained attached to the masseter muscle.

When the left condyle was forced back in position the right came out of the socket. A second wedge was used to hold the left condyle in the socket and then following out the procedure as outlined above, the right condyle was again forced back in the socket.

On the left side the piece of the zygoma was placed in its proper position, sutures being placed through the periostium of the zygoma and the neighboring bone. On the right side the masseter muscle was stretched back in position and the wound closed with silk worm gut. During this time the mandible was held in position by firm pressure. A Barton bandage was now applied.

The patient made a nice recovery, having no deleterious effects from the operation or from the anesthetic. Saline and brandy were

administered per rectum immediately following the operation. Six hours after the operation, water was administered through the nose by catheter. The patient was fed in this way until the Barton bandage was later removed. Four days after the operation the stitches were removed. Fourteen days after the operation the Barton bandage was removed and left off. At this time the patient had good motion of the jaws. The occlusion was perfect, at least as good as before the dislocation and the patient could open her jaws three centimeters.

The patient went home on February 25, 1916, that is, about three and one-half weeks following the operation. At this time she could open her mouth to a distance of four centimeters and mastication was excellent.

So far as we are able to determine, the method of replacing the condyle, using the wedge, is original.

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Speech Conflict as an Etiological Factor in Stuttering. MAY K. SCRIPTURE AND O. GLOGAU, *Jour. Nervous and Mental Dis.*, Jan., 1916.

The analysis of the authors' statistics makes them conclude that speech conflict is an etiological factor in stuttering. Among 171 male patients the stuttering in 33 was apparently brought about by speech conflict exclusively; in 4 cases negligent lisping in their own language had existed. However, in 29 female patients there was only one in whom the stuttering could be attributed to this cause. The striking feature concerning the stutterers from speech conflict is the fact that the stuttering was acquired at the ages of from 5 to 7 years. In 38 cases the etiologic factor proved to be a conflict between the mother tongue at home and the English to be learned at school. P. F.

THE RATIONAL TREATMENT OF STUTTERING.

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Probably no human affliction has been more exploited by heartless charlatans than stuttering. The stutterer, eager to be helped, falls an easy victim to the numberless speech doctors with their sure cure nostrums and infallible methods. Many victims try one so-called cure after another, often spending their last dollar, and in the end are far worse off than before. Such persons if finally treated by honest, scientific methods, often prove to be hopeless cases, for they have lost faith and confidence in any cure, and have acquired a cynicism which is hard to combat. The methods, which charlatans and quack doctors have used are legion. Unnecessary surgical operations, medications and hypnotism have all been popular. Stutterers have been and still are taught to speak in unnatural voices, using sing-song, very loud tones, very high or low pitched tones, and so on. They have been taught to speak beating time, swinging the arm and nodding the head for the sake of rhythm, or clenching the fist and pinching the fingers on difficult sounds for the sake of distraction. It need hardly be said that such schemes never relieve a stutterer of anything, but his money, although occasionally one has recovered from his affliction in spite of them. It must not, however, be overlooked that in some of the methods enumerated, there are things of value, which can and should be used as part of a rational method for the treatment of stuttering.

What then is the rational treatment? What are the aims which the teacher of a class of stutterers should set up? What method of procedure should he follow? What results can he expect to accomplish? These are the questions, which we shall attempt to answer in this article.

Aims: The fundamental aim of the teacher should be to cure the pupils of their pernicious speech habits, and the bodily or facial contortions which accompany such habits, by teaching the correct habits of speech. Under correct habits of speech are included proper posture, respiration, articulation, phonation, fluency and thinking. We say the fundamental aim is to cure the defect. As we shall see later, when we discuss the results, this is an ideal we

must strive for, but which, let us admit it boldly, is not in every case attainable.

Methods of procedure: First of all, every pupil should be carefully examined for organic defects in the organs of speech, and for nervous troubles which may be the cause of the speech disorder. Such examination is to be made by a competent physician and if anatomical defects or nervous troubles are discovered they ought to receive proper medical or surgical treatment. The personal and family history of every pupil is essential, and with the physician's help the case should be properly diagnosed. This diagnosis should be most carefully and thoroughly made, and a course of treatment prescribed before the actual corrective work is undertaken. It is too seldom recognized that little improvement in speech can be effected until the physical condition of the patient is well cared for. The actual correcting of the speech defect is largely pedagogic, and thus falls within the realm of the properly trained speech teacher, whose qualifications and training we shall later discuss. It is a question of habit formation; the removal of bad habits and the inculcating of correct ones. This is no easy task and requires time and infinite patience on the part of the pupil and teacher.

In our statement of the aim in treating stutterers we enumerated under correct habits of speech proper posture, respiration, articulation, phonation, fluency, and thinking. We shall discuss briefly the methods by which each of these habits may be formed.

Posture: In order to speak correctly the pupil must stand and sit correctly, in other words, he must maintain good posture. Good posture in standing does not mean the stiff, stilted attitude of a soldier, but rather a comfortable, well balanced position. The chest should be neither unduly protruded nor hollowed, but held so that the air may be freely inhaled and exhaled without straining or difficulty. The head should be at perfect right angles with the body, the chin being neither tilted nor depressed. In sitting the pupil should not be permitted to slide down in the seat until he rests on the edge of his spine, nor to bend forward so that the back forms a bow. He should sit up straight with his back resting comfortably against the back of the seat.

Above all things, both in standing and sitting, the pupil should be perfectly relaxed. A cramped muscle, straining or stiffness in the fingers, arms, neck, face, or any other part of the body, indicates a useless expenditure of nervous energy and interferes with speech.

It is perfectly obvious that cramping or straining of the speech organs such as the lungs, larynx or lips will interfere with speech. Straining or cramping of any muscle will have the same effect, for the speech organs are extremely sensitive and easily affected by bodily conditions. Moreover, stiffness and cramping of the muscles indicate that the mind itself is not at ease. The pupils should be taught to strive for relaxation of both body and mind. Space does not permit us to enumerate exercises for relaxing the various parts of the body. We shall only mention one, namely, stretching and yawning, which ought to be gone through at the beginning of every lesson. For obtaining relaxation of the facial muscles, the pupil should observe himself in a mirror. He soon learns to smooth out the wrinkles in his forehead or to remove the scowl from his face, if he but observes himself in the glass.

Breathing: While improper breathing cannot be assigned as the cause of stuttering, it is certainly a concomitant of it. It must, therefore, be corrected. The breathing exercises for stutterers are divided into two kinds; deep breathing (artistic breathing) exercises for increasing the lung capacity, broadening out of the chest and strengthening the muscles of respiration, and exercises for breath control in speaking. The two must not be confused. In the former we take in and expel as much air as possible. In the latter we take in a little more air than in ordinary breathing and do not attempt to exhaust it. The teacher must see to it that the breath is inhaled in a natural way, deeply but without straining or forcing.

There are numberless varieties of good deep breathing exercises with which every teacher is acquainted. It matters not which of these are used, if they are performed properly. For gaining breath control the pupil should be taught first of all what we shall call the speaking breath, namely, *inhale quickly and deeply, and without straining with the mouth slightly open. Exhale slowly through the open mouth.* The air should make no noise either when inhaled or exhaled. The purpose of the speaking breath is not to fill the lungs to overflowing, but to get enough air for speaking. It is taken with the mouth open because that is the easiest, most relaxed, quickest way. In speaking we do not close the mouth every time we wish to inhale. After the pupils have learned the speaking breath they should practice exercises of the following nature:

Say a vowel on the outgoing breath and hold it as long as the breath lasts, without straining.

Say a vowel two, three, four, five and six times on one breath, with pauses of various lengths between them.

Count as far as possible on one breath.

Say the alphabet as far as possible on one breath.

Say sentences on one breath, gradually increasing their length.

Say long sentences which require one or more helping breaths, to reinforce the original breath.

The stutterer must be taught to breathe consciously when speaking until right breathing becomes a habit.

Phonation: Most stutterers phonate improperly, in that their voices lack flexibility and they speak in a monotonous tone. If the stutterer can be taught to speak with the proper inflection, he will as a rule speak with greater facility. At first it is well to exaggerate the inflections, for there is little danger that this will become a habit. Besides a little more emphasis on inflection, even among people who speak normally is very desirable. Singing scales, arpeggios and songs, thorough drill in vowels, exercises in speaking and reading with special attention to intonation and melody, lead to good results with stutterers.

Articulation: By means of tongue and mouth gymnastics the pupils should gain conscious control of the organs of articulation, the jaw, the lips, tongue, and soft palate. They should be taught the exact position of the speech organs for each vowel and consonant. Each sound should be drilled first by itself, then in words and finally in sentences. It is necessary to constantly emphasize the fact that the vowel is the most important part of every word, and must be lengthened and strengthened. Vowel drills correctly done are a most important factor in the therapy of stuttering.

The consonant should be pronounced correctly but lightly. Pupils should be taught to distinguish between the voiced and the voiceless consonants, and to produce either at will. Final consonants should be carefully enunciated and all syllables given their full value, so that accurate and distinct speech may be obtained.

Fluency and thinking: If the stutterer is taught to breathe properly, to inflect carefully and above all to lengthen and strengthen his vowels, he will soon learn to read and repeat sentences and poems with smoothness and facility. When, however, he must speak spontaneously, he finds great difficulty, and quickly reverts to his old habits. This is due to lack of confidence in himself and to the *fear* that he will not speak correctly. It is necessary to increase the pupil's confidence in himself, to eliminate if possible this fear. He must be convinced that he can speak properly. A carefully graded series of exercises must be provided for this pur-

pose. At first very little spontaneous work should be demanded of the pupils. They should read and repeat sentences and poems, first together with other pupils, and then alone. Speaking together with one or more persons affords the pupil moral support, which he needs greatly, and under these circumstances he rarely stutters. The next step is reading sentences in which words are to be supplied, completing sentences, forming sentences containing a number of given words, and similar exercises, whch requre a certain amount of spontaneous thinking on the part of the pupil. Then comes the answering of simple questions based upon topics of general knowledge, or upon stories, fables, anecdotes and poems which have already been read; and finally the retelling of stories, talking from topic and argumentation. Allowing individual pupils to direct class exercises instead of the teacher is a good means of creating confidence.

Exercises in rhythm of various kinds are a most valuable aid in obtaining fluency of speech. Proceeding from rhythm in music to rhythm in poetry, the pupil should be finally led to appreciate and use the rhythm which is found in everyday speech.

Results attainable: As has been stated, the cure of the stutterer should be the ideal for which every teacher should strive. The teacher, however, must bear in mind, that it is not possible to cure every stutterer, or he will be doomed to disappointment. We may safely say that most cases if properly treated early enough can be permanently cured, and that all cases can be alleviated. It is perfectly obvious, that the longer the defect is permitted to go uncared for, the more stubbornly will it resist treatment.

Young children yield easily to such treatment as has been outlined in this article. Their minds are plastic, they imitate easily, for neither their speech organs nor their habits of speech are set. They find actual delight in speech exercises provided they are sufficiently varied. Above all, they have not acquired the mental attitude of the adult stutterer, nor the fear which is such an important factor in his psychology. The child is ordinarily not afraid to speak, but finds pleasure in self-expression. It is only the ridicule of his companions which in time drives him to silence and morbid introspection. When he becomes ever conscious of his defect, when he acquires an unreasoning fear of certain sounds, words or situations, the difficulty of treatment increases enormously.

The problem with many young stutterers is, therefore, to inculcate proper habits of speech, before fear has become an integrate

part of their nature, and before their abnormal speech habits have become fixed. The mind of the adult stutterer is no longer plastic and his abnormal speech habits have through long usage become firmly established. He has acquired that unreasoning fear of certain sounds, words and situations which the child as a rule lacks. Many a stutterer who has to all intents and purposes been cured, will confess that at times this fear recurs in his mind, and while he knows it to be irrational, he cannot for the moment rid himself of it.

Is then the case of the adult stutterer hopeless? By no means. A carefully graded series of exercises for increasing confidence as suggested under the heading, "Fluency and Thinking," will help to remove this fear, partially if not entirely. These exercises must be extended beyond the class room. The teacher should take his pupil out upon the street, and have him ask passersby or policemen the way to certain places. Under the teacher's supervision the pupil should telephone, order things in stores, inquire for information at the railroad station, and so on, so that he may acquire the ability to speak properly in all sorts of situations.

If, however, fear stlll persists neither teacher nor pupil need be discouraged. The stutterer's case may be compared to that of a man who must enter a forest infested with dangerous animals. Previous experiences in that forest have instilled in him an irradicable fear He is no coward, yet he hesitates to enter; but provide him with a suitable weapon such as a gun, he will seize it firmly and bravely enter the forest. He may still feel a sinking in the region of the stomach, or his heart may beat a little faster, but he enters and gives a good account of himself if he meets a dangerous animal. The stutterer, too, has had experiences in speech which have instilled in him a fear of certain sounds, words and situations. The rational treatment herein outlined, provides him with weapons to combat his enemy, fear, wherever he may meet him. When an old difficulty in the shape of a refractory sound bobs up in his path, he grasps his weapon firmly, and attacks boldly. In his case the weapon is not a gun but a mastery of the psychology and physiology of speech. His ammunition is not bullets, but a conscious knowledge of correct breathing, vowel and consonant formation, phonation, inflection and so forth, which has helped him before, and will help him again. The fear may be present, yet he will speak quite fluently and well.

In conculsion, we must emphasize the following points and men-

tion Ten Commandments of Speech, which we have found most helpful.

1. There is no royal road to the correction of stuttering. It requires long and patient treatment on the part of the teacher and hard, conscientious work on the part of the pupil.

2. If properly treated at an early age, most stutterers can be permanently cured.

3. The longer a case has been permitted to go uncared for the more difficult will it be to eradicate the defect.

4. Adult stutterers may in many cases be cured and practically all cases may be so alleviated, that the patient can get along quite well in the ordinary affairs of life.

5. Only such stutterers who have rid themselves of fear, be it the fear of word, sound, or situation, can be said to be permanently cured.

The Ten Commandments of Speech: 1. Say to yourself, "I have no fear. I know that I can speak well."

2. Think before you speak!

3. Always speak quietly and calmly, with all the muscles relaxed.

4. Always speak slowly and carefully.

5. Stand and sit quietly and erect when speaking.

6. Before speaking inhale quickly, deeply and without straining, with the mouth open.

7. Be very careful of the first two words in each sentence.

8. Always lengthen and strengthen the principal vowels.

9. Be especially careful to lengthen the short vowels.

10. Be honest with yourself. Do not try to avoid words that you think difficult.

Speech Clinic, College of Physicians and Surgeons, Columbia University.

Speech Improvement Department, University and Bellevue Hospital Medical College Clinic.

REPAIR OF THE TYMPANIC MEMBRANE IN PERFORATIONS OF LONG STANDING.

DR. A. M. DUNLAP, Shanghai, China.

The object of this article is to report a series of cases, which have been treated for persistent perforation of the membrana tympani, by the Okuneff trichloracetic acid method. The closure of the perforation, in practically every case, has been undertaken not so much for the purpose of improving the hearing, as of stopping repeated attacks of otorrhea. Many of the patients were recent arrivals from the United States, where they had been living in a comparatively dry climate; and in most cases had had no discharge from the ear since the onset of the trouble which produced a "broken ear drum." The climate of China, and especially Shanghai, on the other hand, is extremely damp, which undoubtedly has been instrumental in producing changes, so that in some cases practically every attack of rhinitis brought on a discharging ear. Be that as it may, the fact remains, that people who had had no trouble with an old perforation before coming to China, began almost immediately after arrival to be bothered with the ear.

With the earlier cases some of the other methods for closure, such as silver nitrate, incision of the edge of the perforation, thin pieces of paper applied after Blake's method, etc., were tried, but without success. Encouraged by Okuneff's statement that 80 per cent of the perforations could be closed with trichloracetic acid, all the cases were immediately treated by that method. A 10 per cent solution of cocain was first applied to the perforation for a few minutes, and then the edge of the perforation was touched with a very small cotton probe wet with a saturated solution of trichloracetic acid. A white eschar forms where the acid has touched, so there is no doubt as to the success of the application. Care should be taken, however, to wipe away all the cocain from the drum before applying acid, as the two combine and form a white precipitate. This interferes with the cauterization.

This series comprises some fifteen cases in all. A few of them only will be selected to illustrate this method, and the results of treatment:

Case 2. A child, eight years old, with a running ear of two years' standing. An examination of the ear drum showed a small

oval perforation centrally placed, just in front of the lower end of the malleus. The discharge was not constant.

Treatment consisted in first removing adenoids. The discharge stopped in two weeks' time, but the perforation still persisted. Three weeks after the operation the first application of acid was made, and followed in five days by a second. The perforation was closed at the end of a week without a third application. Examination two years later revealed a normal ear drum. Hearing was improved in this case.

Case 5. Patient, a man 29 years of age with both ear drums perforated. The right ear dated back ten years to an attack of otorrhoea, since which time there had been no discharge until his arrival in China. The left ear drum had been injured by an accident in early childhood and was divided into an upper and a lower half by a long oblong perforation. The right ear drum presented a large central perforation with a polypus protruding into the external canal.

At first an attempt was made to close these perforations by Blake's paper-splint method and just at first there was a reduction in the size, but after a while the improvement stopped entirely. Trichloracetic acid was then used with the result that after twenty applications covering a period of seven months the right ear drum was closed, and after eight applications covering three months, the left ear drum was closed.

Since the left perforation was the larger and of longer standing it is of interest to note that it was the first to close. One year after closure, the right ear drum burst, as a result of the nose being blown violently, and almost immediately became infected following a head "cold." The perforation was subsequently closed, however, after a dozen applications covering a month and one-half. The left drum remains firm. Hearing is considerably improved.

Case 7. Patient, a woman thirty-five years of age with a discharge of several months' duration from the left ear. A large, round perforation was found just below the long process of the malleus.

The discharge was first stopped after thoroughly opening up the Eustachian tube by politzerization, and by forcing air through the tube through the tympanic cavity with a Siegle otoscope.

The perforation was closed after twenty treatments covering a period of four months.

Case 8. Patient, a man eighty-nine years of age, with a perforation of thirty years' standing. He frequently had a little dis-

charge but thought nothing of it, and came for treatment only that his hearing might be improved. Examination of the right ear drum showed a large kidney shaped perforation in the posterior half of the drum. A watch could be heard if placed against the ear.

Thirteen treatments were given covering a period of five months, when the patient was compelled to leave Shanghai. The perforation was considerably smaller than when the treatments were begun. On the patient's return three months later there was still further reduction in the size of the perforation. Twenty-three treatments covering a period of four months were sufficient to close the perforation. The hearing was remarkably improved in this case. This perforation was subsequently re-established, and is under treatment at the present time.

Case 14. Patient, a young woman of twenty-six years, with a perforation which she had had for eighteen years. She wished the perforation closed because of a slight otorrhea produced by diving.

Examination showed an oblong perforation just below and posterior to the long process of the malleus. A small adhesion bound the end of the long process down to the posterior wall of the tympanic cavity.

Treatment consisted in first destroying the adhesion, and cauterizing with acid. Thirty-three applications of the acid were made, covering a period of seven months, before the perforation was closed.

The above brief statements suffice merely to show the character of the conditions, the length of time treated, and subsequent results. In treating this series of cases a number of interesting points have been observed.

Gomerz's method was to use the saturated solution of trichloracetic acid and to repeat the cauterizations at intervals of from four to eight days. The exact time which should elapse before repeating a cauterization should be determined, however, only after a careful study of each individual case. Two important factors should be taken into consideration in making such a decision: First, the amount of scar tissue which makes up the edge of the perforation; and second, the vitality of the ear drum itself.

The amount of scar tissue cannot always be determined at first. A great deal can be learned, however, from the appearance of the perforation, and from the history of the case. Having determined as far as possible the amount of resisting scar tissue present, the frequency of cauterization should be regulated by the rapidity with which this tissue is destroyed and granulating tissue secured for

the entire circumference of the perforation. Treatment every third or fifth day has worked out best in most cases of this series. Observation has shown that a perforation will not begin to close until there is an entire circle of granulating tissue. Hence, scar tissue which is preventing the growth of granulating tissue must first be destroyed before one can hope to close a perforation. This should be considered the first stage in the treatment.

Early in the treatment of this series it was observed that a great many cauterizations of the cases of long standing had to be made before there was any improvement. Furthermore, it was noticed that when a perforation had started to close, the growth was very rapid. All perforations, when they begin to close assume a more or less circular shape, no matter what the previous shape has been. This would substantiate the above statement that in order to close a perforation there must be granulating tissue covering the entire edge.

The next important condition which had to do with the closure of a perforation is the health of the drum tissue. In two cases of the series the membrane had become so thin in the part immediately surrounding the perforation, that no growth of new membrane could be started until the perforation had been made much larger by destroying this membrane and a firm base given for growth.

The vitality of the drum membrane should regulate also the frequency of cauterization after the scar tissue has been sufficiently destroyed to produce granulations. This should be considered the second stage of treatment. Each individual case must be studied and the frequency determined by the reaction produced. At times it has been found necessary to use weaker solutions of acid, as the saturated solution apparently destroyed the new tissue. It has been found in these cases that cauterization during this stage of treatment should be from a five to a seven days' interval.

The tendency probably has been to cauterize too frequently. In one of the earlier cases, treatment had been going on for well over a year without any perceptible decrease in the size of the perforation. Cauterizations had taken place on an average of once every two weeks. The patient was obliged to leave town for a month and when he returned the perforation was about half the size it had been previously. In three other cases of this series the perforations closed after cessation of treatment, while the patients were on vacation, or after they had been compelled to return to their stations.

The above experience has taught us to cauterize less and less frequently during the last stage of the treatment and in some cases to stop treatment entirely and watch the result.

The size of the perforation has not influenced the final result, though it has in some cases made a difference in the duration of the treatment. Neither has the age of the patient materially influenced closure. The only factor which seems to interfere with a successful treatment is the entire absence of a definite drum membrane at some point in the circumference of the perforation.

Not only has the hearing been considerably improved in practically every case, but there has been no tendency for the tympanic cavities to become inflamed during subsequent attacks of rhinitis. The cushions of air, which nature has provided, having been reestablished in the Eustachian tube and tympanic cavity, there is no longer a tendency for the byproducts of rhinitis to pass easily into the Eustachian tube whenever the nose is blown.

The history of some of these cases would seem to indicate that no attempt had been made to close perforations following a severe otitis media, after the discharge had stopped. There are undoubtedly individuals in the United States as well as in China who would be saved the inconvenience of repeated attacks of otorrhea if, following such attacks, it could be made absolutely certain that the perforation had closed.

Harvard Medical School of China.

The Importance of the Post-nasal Space as a Focus of Infection in Infants and Young Children. GEORGE E. BAXTER, *Illinois Med. Jour.*, July, 1916.

The author points out that the post-nasal space is an important atrium for general infections in infants and young children. Complications equally severe as those resulting from faucial tonsil infections may occur; he emphasizes the necessity of urinalysis in infants and young children suffering from infections of the upper respiratory tract. He reports two cases of hemorrhagic nephritis resulting from post-nasal infection. P. F.

A CEREBRAL COMPLICATION OF ACUTE MASTOIDITIS WITH VERY SUDDEN UNUSUAL SYMPTOMS.

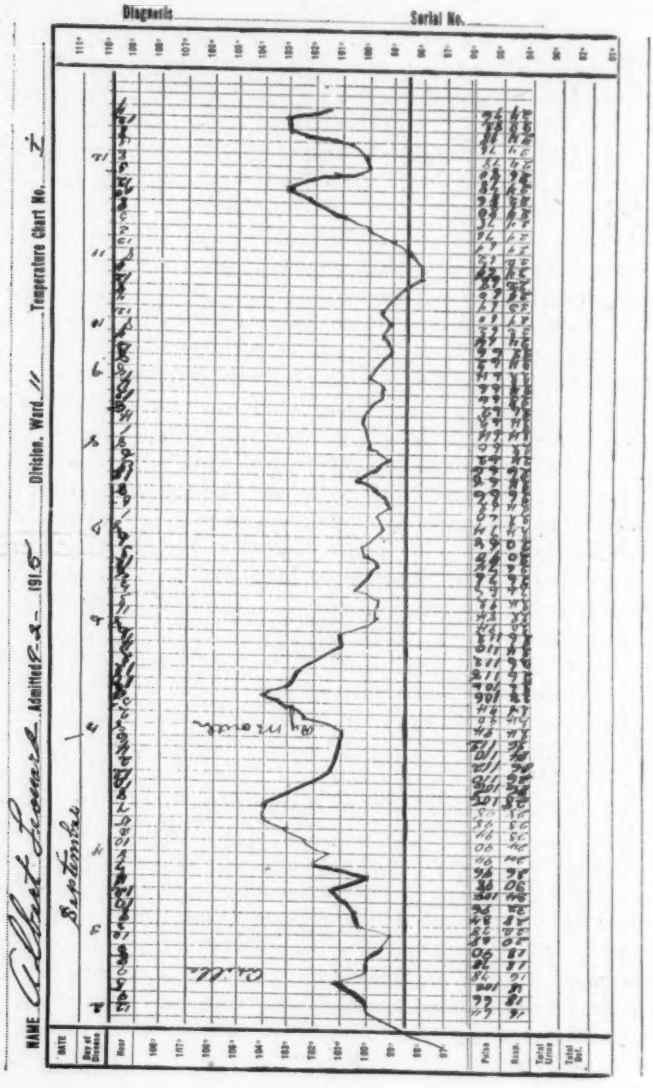
Dr. W. T. Patton, New Orleans, La.

The writer does not in this paper wish to give the impression that he considers cerebral complications rare in mastoid involvement; in fact, they are rather common. However, it has been impossible to find any record of a case developing so suddenly and with such severe onset as the one to be reported. In looking over records in the Charity Hospital of Louisiana I was able to find in the past seven years, records of seven cerebral abscesses from various causes; all the patients died either before or after operation. Two other cases I saw in other hospitals of the city; both died. Dr. J. W. Murphy,[1] of Cincinnati, reported five cases seen by himself in one year, all following suppurating ears. In all of these cases the abscess was found either at operation or post-mortem. This is certainly a large number of cases for one man to see in such a short time when we consider that the records in the large Charity Hospital show only seven cases recognized in the past seven years. In speaking to a number of surgeons and otologists very few have seen more than one case of cerebral abscess and a number of the busy surgeons have never seen a case.

The portion of the brain most likely to be involved from middle ear infection, depends often upon the manner in which the infection gains entrance. When it occurs by direct continuity, the temporo-sphenoidal lobe is most often the seat of abscess. When the extension is through the labyrinth the abscess is most often on the anterior aspect of the cerebellum. Since abscess of the brain of otitic origin is a secondary and not a primary disease, the problem of diagnosis is often masked by the primary disease or some of its complications. Quite a large extradural abscess may be present with little or no symptoms. A cerebral abscess of otitic origin, being an acute infection, the time is generally too short for the pathognomonic eye symptoms to develop, as in the case of tumors of the brain. Hence, the absence of optic neuritis does not exclude cerebral abscess.

It will hardly be necessary to mention here the symptoms of brain abscess, as the normal or subnormal temperature, slow pulse, slow respiration, slow cerebration and want of sustained attention, mental

1. The Laryngoscope, Oct., 1915.


Diagnosis
Serial No.
NAME
Admitted
Division. Ward.
Temperature Chart No.
Date
Day of Disease
Hour
Pulse
Resp.
Total Urine
Total Bel.

obscuration, and tendency to doze, are too well known to all. Often, however, we may have abscess with very few of the above symptoms, and these are the cases that give us most trouble.

When the abscess is in the cerebellum, the respirations are much slower than when in the temporo-sphenoidal lobe, are more apt to be irregular and of the Cheyne-Stokes character.

As to the treatment, once a diagnosis is made the only treatment is incision, and the sooner the better. As to the method of incising there is some difference of opinion. Some men use a long cataract knife claiming that because of its thinness there is a minimum amount of trauma and because of its sharpness it readily pierces a tough capsule. Others use a blunt grooved director. Should there be a sinus showing pus, the encephaloscope is very useful. Once the abscess cavity is reached, it can be more freely opened by means of a fine artery forceps. Then some form of drainage tube or silk worm gut is put in. One should be very careful in irrigating the abscess cavity. The author prefers not to irrigate.

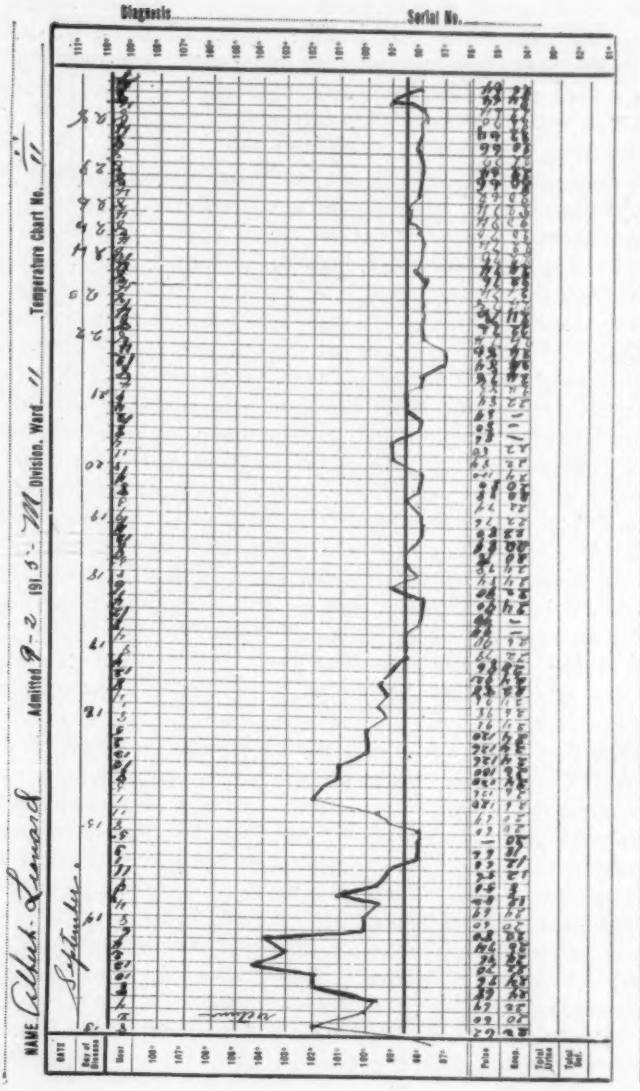
The case I am about to report seems unusual both in method of onset and recovery. I hope some one with more experience will clear up several points which are still obscure.

Albert Leonard, white, married, age 28, was admitted to the surgical service of the Charity Hospital, New Orleans, September 2, 1915, with the following history:

Family history: Negative.

Past history: Smokes moderately, does not drink, never was sick before, with exception of "chills and fever;" denies all venereal history. Married eight years and has three healthy children. Occupation, farmer.

Present illness: On the morning of September 1, about 7 o'clock, while driving the cows, he was suddenly attacked with a violent pain in his right ear; this continued all day. Patient used a hot water bottle to his ear and hot sweet oil in the ear with no relief. The same night about 7 o'clock, the ear began to discharge and the pain became much less severe. The patient was quite restless and drowsy. About 10 p. m., his wife states that his left hand and arm began to "jump," then the leg on the same side became similarly involved, and before morning there was paralysis of the entire left side. Pain still continued over the right side of the head. The patient was brought to New Orleans September 2, and admitted to the surgical ward of the Charity Hospital. I was first called to see the case on September 3, about 4 p. m. On examination I found the patient very drowsy, answering questions very poorly and


Diagnosis
Serial No.
NAME Gilbert Lenard
Admitted 9-2 1915
Division, Ward 11
Temperature Chart No. 11
September
DATE
Day of Disease
Hour
Pulse
Resp.
Total Urine
Total Bat.

slowly. The right ear canal was full of sero-sanguineous fluid. Tympanic membrane bulging; posterior superior canal wall sagging. Only slight tenderness over mastoid; no edema. Entire left side paralyzed, with occasional twitching of muscles. The right pupil was dilated, not reacting to light and the eye was turned out; at this time the eye grounds were only slightly congested. Nose, throat and left ear normal; temperature 100°, pulse 78.

A diagnosis of brain abscess was made and operation advised. A neurologist examined the case and agreed with the diagnosis.

Blood count, September 3: *White cells,* 22,590; *lymphocytes,* 10; *neutrophiles,* 90; *Wassermann,* negative. Smear from the ear showed staphylococcus aureus, also a gram negative and a gram positive bacilli. The case was then transferred to my service. Mastoidectomy was performed on the morning of September 3. A very small amount of pus was found in the aditus; no necrosis. Dura or sinus not exposed. As the mastoid involvement did not account for the symptoms, the incision was extended up and the skull trephined one and one-half inches above and one-half inch posterior to the external auditory canal. A piece of bone the size of a silver dollar was removed. The dura seemed healthy; no apparent bulging and no pulsation. I incised and explored the brain in three directions with a cataract knife to a depth of about one and one-fourth inches, but found nothing. The wound was closed and the patient returned to the ward.

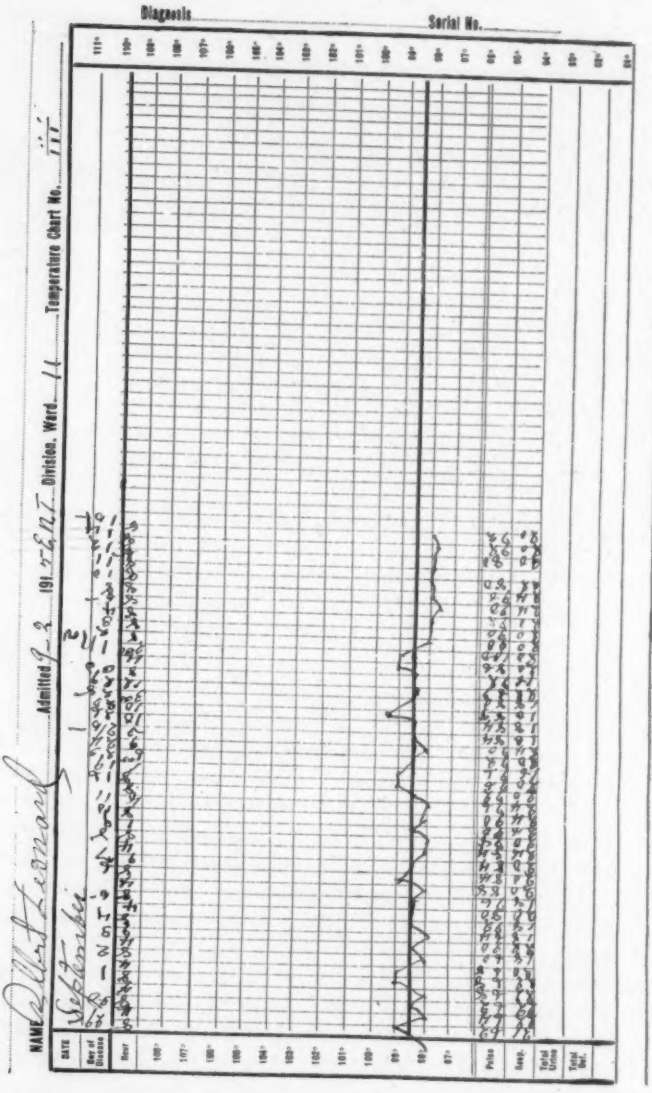
September 4: Patient much improved. Paralysis almost entirely gone, mind seemed clear and bright and patient stated that he felt fine.

September 6: White count, 18,000. Patient continued to do nicely. Temperature, 100; pulse, 76.

September 9: White count, 28,300. Patient passed a bad night. Respiration very bad according to nurse (Cheyne-Stokes breathing). Paralysis again of the entire left side. Patient unconscious and in very serious condition. Temperature, 99; pulse, 66. Again taken to the operating room, more bone removed, higher up and lower down, and brain explored in six different directions, through two incisions in the dura. No pus found. I was afraid to attempt any more cutting of the brain. It seemed useless.

September 10: To my surprise I found the patient again greatly improved; paralysis less but not entirely gone. White count, 22,280. Temperature, 99; pulse, 64.

September 12: Wound clean, patient continued to improve. White count, 20,800. Temperature, 100; pulse, 78.


Diagnosis
Serial No.
NAME
Admitted
Division. Ward.
Temperature Chart No.
DATE
Day of Disease
Pulse
Resp.
Total Urine
Total Wt.

September 23: Paralysis less. White count, 11,900. Up to this time the wound was clean. I now noticed considerable pus coming from the opening in the dura. It will not be necessary to give further history, except to say that the patient continued to improve, the blood count gradually going down to 6,000; temperature, normal; pulse, 80.

November 1: There appeared three small cerebral hernias though the line of incision, corresponding to the three incisions in the dura. I was able to get rid of part of the hernia. However, one the size of a hen's egg, persisted.

November 26: Under local anesthesia, I succeeded in transplanting a piece of fascia lata, stitching it to the dura, then closing the skin incision. The wound healed by first intention. The patient left the hospital on January 3, able to walk and use his arm very well. I am sure he will eventually get entire use of the left side.

BLOOD COUNTS.

	Sept. 3	Sept. 6	Sept. 9	Sept. 10	Sept. 12	Sept. 15
White	22,590.	18,000.	28,300.	22,280.	20,500.	16,300
Small lymphocytes	10.	8.	8.	9.	1.	3.
Neutrophiles	90.	86.	91.	88.	87.	85.
Large lymphocytes		5.	1.	2.	11.	12.
Eosonophiles		1.		1.	0.	0.
Basophiles					0.	0.

	Sept. 16	Sept. 17	Sept. 18	Sept. 23	Oct. 27
White	18,050.	13,000.	19,700.	11,900.	12,552
Small lymphocytes	1.	5.	1.	4.	
Neutrophiles	83.	79.	84.	70.	74.
Large Lymphocytes	0.	16.	15.	26.	26.
Eosonophiles	0.	0.	0.	0.	
Basophiles	0.	0.	0.	0.	

Urine September 18. Few hyaline casts.
Culture from mastoid and external ear canal September 10, 1915; staphlococcus aureus and few gram positive and negative bacilli.

Conclusions: 1. Note the suddenness of onset. I was particularly careful and could find positively no history of previous trouble in either ear. Patient and wife both stated positively that he had never had any previous trouble with his ears.

2. The amount of cutting from which the brain will recover.

3. In what way if not by abscess can we account for the symptoms? No pus was ever found.

4. Remember that the wound was clean for several weeks after the last operation, then suddenly it began to discharge pus. Could the abscess have worked its way out through one of the incisions?

In concluding I should like to than my internes, Dr. Gerster and Dr. Zengel, for their help in making blood counts and other examinations.

1109 Maison Blanche Building.

SAFETY-PIN IN LARYNX; PERI-LARYNGEAL ABSCESS TREATED FOR DIPHTHERIA.*

DR. H. L. LYNAH, New York City.

Albert H., age 7 years, was admitted to the Willard Parker Hospital from Bellevue Hospital on December 21, 1915, with a history of laryngeal diphtheria of four days' duration. On admission to the hospital the child was examined by Dr. Whitcher, of the resident staff, who reported no visible exudate on the tonsils, nor any nasal discharge. The larynx was not examined. There was marked croup and retraction, but intubation was not considered necessary. A dose of 20,000 units of antitoxin was administered and the larynx was poulticed. No Schick test was made. The temperature on admission was 103°, pulse 140, respirations 36. The temperature rose to 104.4° after the antitoxin injection, but returned to normal on the third day. The "croupy attacks" still persisted. The patient remained in the hospital for a period of seventeen days, and was treated with stimulating expectorants. No one thought it necessary to notify me of the persistence of the "croupy cough" and after a series of consecutive negative cultures the child was discharged on January 6, 1916.

On January 28, 1916, the child was admitted to Kingston Avenue Hospital in Brooklyn suffering with measles and what was supposed to be laryngeal diphtheria and a second dose of 10,000 units of antitoxin was administered. Dr. W. T. Cannon, the resident physician, on making rounds shortly after the admission of the child, noted that the cause of the persistent dyspnea was due to a large pointing peritracheal abscess. On incising the abscess a large amount of pus was evacuated, followed by an expiratory cough through the wound and on inspiration the remaining pus was aspirated, which increased the dyspnea and the boy became markedly cyanotic. As it was evident that the tracheal rings had sloughed through from the long standing abscess, Dr. Cannon rapidly introduced the tracheal dilators into the wound and was on the point of inserting a tracheal canula when he saw a bright, shining foreign body in the tracheal fistula suddenly disappear, before he could grasp it with forceps, and fall downward into the lung. He then introduced the tracheal canula and the dyspnea improved but the cough still persisted. After the introduction of the canula

*Read before the New York Academy of Medicine, Section on Laryngology and Rhinology, March 22, 1916.

considerable pus was coughed out. The following day owing to aspiration of pus about the canula even though the wound was packed off the tracheal tube was removed and a 6-7 O'Dwyer intubation tube introduced which passed below the tracheal fistula. The abscess cavity and tracheal wound were now loosely packed with plain gauze. The following day I saw the child, with Dr. Cannon, and from the history obtained decided to make a bronchoscopic examination, no x-ray picture having been made.

The child was in fairly good condition, but suffering with a persistent cough. There were a few scattered subcrepitant rales over the upper lobe of the right lung with slightly diminished respiratory murmur over this area. Dr. Regan thought there was an area of pneumonia in this region due to the foreign body and aspiration of pus. The temperature was 101.6°, the pulse and respirations increased. On removal of the intubation tube through the direct speculum the larynx was seen to be partly filled with granulation tissue, and presented the appearance not unlike the picture of the larynx as seen in a case of chronic stenosis following diphtheria. The 5 mm. bronchoscope of Dr. Jackson was passed and the trachea was noted to be edematous on the anterior wall at the site of the tracheal slough and covered by granulation tissue. On locating the carina the tube was passed into the right bronchus and just opposite the orifice of the superior lobe bronchus a bright, shining foreign body was seen and recognized as a safety pin with the keeper end presenting. The ring end of the pin was well down in the stem bronchus. The keeper was grasped gently with the side curved mosquito forceps of Dr. Jackson and nursed into the lip of the bronchoscope to see whether or not the pin was open. The pin was easily turned and found to be closed and removed, the bronchoscope being removed at the same time. The actual duration of the removal required four minutes; no anesthetic was used. The abscess cavity healed within two weeks and the child was discharged from the hospital cured.

The interesting points in this case are: That a foreign body impacted in the laryngo-trachea was diagnosed as laryngeal diphtheria in Bellevue and the Willard Parker Hospitals and treated as such in the latter hospital, and some weeks later when admitted to the Kingston Avenue Hospital. after having received a second injection of antitoxin for laryngeal diphtheria, was finally recognized as a foreign body, sloughing through the trachea, by the resident physician after he had opened a peri-tracheal abscess which he recognized as the cause of the dyspnea; that there was no ana-

phylactic shock following the second injection of antitoxin six weeks later, nor was there any antitoxin rash following either injection; that the child made a perfect recovery and has a normal speaking voice.

I have gone on record more than once in saying that any slowly progressive dyspnea should be looked upon with considerable degree of apprehension and when you cannot account for the cause of the dyspnea a direct laryngeal and bronchoscopic examination should be made. Had this rule been followed the child would have been readily relieved of the discomfort caused by the sojourn of the foreign body during a period of six weeks.

127 West Fifty-eighth Street.

The Combination of Local and General Anesthesia, and the Use of Adrenalin. Dr. D. J. Gibb Wishart, *Canadian Practitioner and Review*, January, 1916.

This article formed part of a symposium upon anesthetics. The writer protests against the increasing tendency to perform nose and throat operations under general anesthesia, and prefers the abolition of the shock by the use of morphia combined with atropin, and in selected cases, hyoscine, followed by careful packing of the nose with equal parts of a ten per cent solution of cocaine and a 1 to 1,000 solution of adrenalin, one hour before operating. He refuses to accept the placing of the blame for deaths occurring where local and general anesthesia were combined, upon the local anesthetic, in the absence of post-mortem examination by trained pathologists. Nor has he seen a death where a highly-trained anesthetist was employed. The peril lies in the use of adrenalin. A lengthened reference is made to the observation of Levy upon the action of adrenalin and chloroform and ether. Adrenalin should never be injected during the course of a general anesthetic. It requires the most highly-trained anesthetist to administer the anesthetic in nose and throat cases, which are the cases, in nearly every instance, where the combination of local and general anesthesia are required.

Wishart.

A CASE OF HEMIPLEGIA OCCURRING IMMEDIATELY AFTER TONSILLECTOMY UNDER GENERAL ANESTHESIA.*

DR. WILLIAM A. SCRUTON, New York City.

The subject, who was a patient in the Manhattan Eye, Ear and Throat Hospital, is a female child, 11 years old. Inquiry into her past history develops no etiological factor bearing on the complication of tonsillectomy about to be considered. Her appearance on admission to the hospital was that of one in perfect health. The result of the anesthetist's examination of the chest was negative.

Tonsillectomy was performed July 10, 1915, according to the method recommended by Sluder with a modified Mackenzie tonsillotome. In this instance the technique was not observed to a nicety and a small portion of the gland remained at the base or lingual extremity of the left fossa. Removal of this portion was effected by means of a grasping forceps and a Mosely snare.

The exact time of the onset of the hemiplegia (left side) is in doubt. The first record of the condition is at six o'clock on the morning of July 11, when the child was requested by the nurse to leave bed and was found unable to move. The patient was reasonably certain that the paralysis existed when she recovered from the anesthetic.

The temperature chart shows a tracing which made a gradual rise to 101.8° forty-eight hours following operation; the return to normal was also gradual and extended over a number of days. It is recorded on the chart that during the early hours of the second day after operation the patient was restless and noisy. On a few occasions, complaint of slight headache is recorded.

Recovery from the paralysis was definitely under way within seventy-two hours. It began in the leg and shortly afterwards was manifest in the arm. In about two weeks she began to try locomotion about the ward and on July 28th, when discharged, walked from the hospital without assistance.

I have not consulted the literature on the subject, but in the nine years that I have been connected with the Manhattan Eye, Ear and Throat Hospital, where several thousand tonsil-

*Read before the New York Academy of Medicine, Section on Laryngology and Rhinology, March 22, 1916.

lectomies are performed each year, there has been no similar case.[1]

In conclusion, I will endeavor to offer solution of two problems which naturally come to mind in connection with this case; namely, "What happened?" and "Why did it happen?"

The paralytic symptoms manifested must have been due to either brain pressure or brain softening; with this as a premise, a differential diagnosis is required between cerebral hemorrhage, embolus and thrombosis. The question of thrombosis may be eliminated at once because there are always prodomal signs and furthermore it does not occur at the age of this patient. Hemorrhage might have been caused by straining and excitement at the time of taking ether, or by the strain of the vomiting of ether recovery; those who had this phase of the case under observation, agree that these factors were not prominent. Regarding embolus there is a definite factor of causation in the opening of the vessels at operation. Considering the symptoms:—as against hemorrhage, there was no coma, which surely would have been present if sufficient pressure had developed to cause complete hemiplegia; there was no immediate subnormal temperature followed by a slow rise to 102°; there was rapid recovery of function. The preponderance of evidence, to my mind, points indubitably to a diagnosis of embolism.

There is a certain circumstance concerning the operation in this case which theoretically may acount for the subsequent history. It was performed under my direction by a man seeking instruction and consumed about twenty-five minutes. The piece of gland left in place by the tonsillotome was fished for repeatedly and the grasping instrument regularly pulled away from the friable material; there was consequently considerable traumatism and an unusual amount of vigorous sponging in the fossa which may have caused dislodgment and discharge of clot into the circulation.

Terminal condition found at examination about six and a half months following operation: the leg seems to have entirely recovered: a condition of athetosis exists in the foot; the arm has recovered control of all movement but the execution is slow; athetosis is established in the hand; the face still shows paralysis at the angle of the mouth. The picture now presented, is substantially permanent; a truly tragic condition resulting from the, generally so-called, insignificant tonsil operation.

1. A similar case occurring in the New York Eye and Ear Infirmary was reported by Dr. Gracey in the January, 1917, issue of THE LARYNGOSCOPE.—ED.

27 East Fifty-seventh Street.

EDEMA OF THE GLOTTIS FOLLOWING TONSILLECTOMY.

Dr. E. Lee Myers, St. Louis.

The occasion for my reporting this case is the rarity of edema of the glottis as a complication of tonsil operations. So far as I can ascertain the literature on this subject is very meager. Dr. L. W. Dean (The Laryngoscope, July, 1910), and Dr. C. W. Richardson (The Laryngoscope, July, 1913), both refer to Ricordeau (These de Paris, 1886), who cites Bauchacourt and Martin (*Gazette des Hopitaux*, 1868, p. 433). It is thus seen that what reference there is to this complication is rather indirect and mentioned as a possibility and not as one encountered by recent writers. Ricordeau, in describing accidents following tonsillectomy, called attention to mild infections with much edema which may prove fatal. He quotes Bauchacourt as reporting a case of this kind, and Martin who published two similar cases, the patient having died of edema of the glottis. He cites two cases of his own of edema of the glottis following tonsillotomy with a fatal issue in one of the cases.

The case I wish to report is as follows: The patient, a physician, complained of fullness in both ears. The tonsils were buried, the right one having been clipped a few years previously. Upon manipulation some caseous material could be expressed. No evidence of general infection from the tonsillar condition.

Family history: Father died at 80 of cardiac incompensation; mother at 79. The doctor comes of a family of very muscular, robust men. No familial constitutional diseases.

Personal history: Age 35. Complains of psuedoanginal pains. Has had typhoid; no other diseases. Blood pressure 126. Patient of powerful physique, of plethoric type and weighs 204 pounds.

Data of first operation: The left tonsil was removed at one sitting by dissection, using one per cent quinin and urea hydrochlorid as the infiltration. A slight oozing hemorrhage was the only complication which no attempt was made to control because of the patient's wish to be bled somewhat to reduce his full-bloodedness.

Data of second operation: The same preparation was employed for local anesthetic, and in the same percentage, as in the first operation. No difficulty in separating the anterior pillar from the tonsil; the posterior pillar was more adherent. Two or three tags

were removed with the tonsil punch. Slight bleeding from an arteriole was stopped by torsion. No hemorrhage and the patient was taken home.

At midnight I was called hurriedly because of the patient's shortness of breath. His face was slightly puffed and anxious. There was no cyanosis. Laryngoscopic examination showed a turban-shaped epiglottis, with infiltration of the glosso-epiglottidean folds. What little could be seen of the cords showed that they were not involved.

Treatment: Ice was given to suck and this was kept up for forty-eight hours. Ice was packed around the throat for the same length of time. The throat was sprayed with adrenalin for the first twelve hours; after that a one per cent cocain in adrenalin was used. The patient had the characteristic apprehension met with in obstructive conditions of the larynx and it was necessary for me to remain with him continuously if for no other reason than to relieve his anxiety. No tubing or tracheotomy was necessary.

Conclusions: I do not believe that the quinin and urea hydrochlorid can be held responsible for the edema. I have done numerous tonsil dissections with the various local anesthetics and have noticed that in the buried variety of tonsils with adhesions there is quite a little edema of the uvula and the posterior pillar, especially when the patient is rather full-blooded. Anemic and under-nourished men do not seem to react so much to the operation.

There was no fever in this case which excludes anything but a very low-grade infection; but as the use of adrenalin and ice caused the condition to disappear, I believe that the edema was due to the injury to the soft parts and the patient's resisting power which induced a larger supply of lymph to the parts than could be readily carried off. Edema of the soft parts due to the local infiltration is not amenable to adrenalin as I have noticed on numerous occasions when I have prescribed astringents and adrenalin to reduce edema of the uvula frequently seen after a tonsil dissection.

3904 Laclede Avenue.

A CURIOUS CASE OF DIPHTHERITIC MEMBRANE IN THE LUNG SIMULATING A FOREIGN BODY, DIAGNOSED AND REMOVED BY THE BRONCHOSCOPE.

Dr. Ross Hall Skillern, Philadelphia, Pa.

A boy seven years old, referred by Dr. Becker, of Sunbury, Pa., was brought to the Medico-Chirurgical Hospital with the following history. About one month before, he took two beads to school. While holding them in his mouth he was seized with a sudden fit of coughing, one bead slipped down his throat; the teacher recovered the other.

Previous History. Had a severe attack of diphtheria nine months previously, followed by a cough which lasted for about two months, then cleared up entirely.

Present Condition. Violent attacks of cough and suffocation which come on at night. Cough ringing and croupy. Expectorates blood-tinged mucous in considerable quantities. Voice, husky, sometimes aphonia. Examination of chest practically negative.

Fluoroscopic x-ray examination absolutely negative.

Bronchoscopic examination: The left lung. After careful and prolonged search, nothing pathological was to be seen. The right lung. Slightly above and at the lower lobe bifurcation a membrane was noted which bled on being loosened with the dull hook. As the child had been under bronchoscopic examination for nearly an hour and had begun to show signs of distress, it was thought wise to postpone further treatment for several days. About two hours later, words came from the ward that the patient was extremely dyspneic. Dr. Ridpath immediately visited him and found his condition so serious that he was again brought to the operating-room and an immediate tracheotomy performed. Three days later he was anesthetized and the bronchoscope again passed. The membrane was loosened but was so friable that it was only possible to take it piecemeal. This was done until apparently all of the membrane had been removed. The tracheotomy tube was left in place.

That night, pieces of membrane were coughed up and expelled through the tube. The symptoms immediately began to abate, dyspneic attacks disappeared. The tube was removed on the seventh day with no return of the cough or dyspnea. Since then the child has been entirely well.

Bacteriological and pathological examination of the membrane showed almost pure cultures of a Klebs-Loeffler bacillus which had lost its virulence (no influence on guinea pigs). Membrane identical with that of diptheria.

The curious phase of this case was that the delayed symptoms appeared coincidently with the apparent history of an aspirated foreign body.

2030 Chestnut Street.

Ulcero-Membranous Stomatitis and Gingivitis Among Troops on Active Service. F. B. BOWMAN, *British Med. Jour.*, March 11, 1916.

This is a communicable disease found prevalent among the English troops. From a study of a hundred cases the author found the following:

The disease seems to be but another stage of a well-recognized disease known as pyorrhoea aveolaris. That is to say, the similar organisms are found plus the fusiform and spirivlum. The infection spreads from the gums to the mucous membrane, cheeks, tonsils, tongue, etc. On the membranes of the mouth superficial ulcers form that are covered by white friable membrane, easily removed and leaving a bleeding surface beneath. In advanced cases it suggests scurvy. The gums bleed easily, are injected, retracted from the teeth and spongy, the teeth becoming loose and sensitive. The breath is often fetid. There is always some glandular enlargement. The temperature ranges between normal and 102 degrees F. There is always more or less physical depression. The acute malignant form may be regarded as noma. The ulcerated involvement of the tonsils may be designated as what we know as Vincent angina. In the treatment the author recommends the following: Local treatment with emetine for the pyorrhoea and for the ulcero-membranous stomatitis

Vinum ipecacuanhae	4 drams
Glycerinum	1 dram
Liquor arsenicalis	3 drams

Mix, label "poison" and apply with applicator or tooth brush to teeth and gums. STEIN.

A NEW INSTRUMENT FOR ATTACHMENT TO SUCTION APPARATUS TO MAINTAIN A DRY FIELD IN TONSILLECTOMY UNDER GENERAL ANESTNESIA AND TO LESSEN OCCURRENCE OF POST-OPERATIVE PNEUMONIA.

DR. SIDNEY ISRAEL, Houston, Texas.

The aim of any surgeon is to operate always with the field as dry as possible, and to no one more so is this fact of greater aid and importance than to the laryngologist. In the light of recent reports of far too great a number of post-operative pneumonias, following tonsillectomy when done under a general anesthetic, due possibly to the aspiration of blood, or highly infectious material from the tonsils, the writer was stimulated to look about for some means whereby this aspiration would be avoided or reduced to such a minimum that the chances of this complication would be considerably lessened. The result has been ideal and one feature that makes its success and popularity is its simplicity in detail and efficiency in performance.

The device which I have the pleasure to submit has been thoroughly tried in numerous cases of tonsillectomy performed by the various methods in vogue to-day; namely, dissection, Sluder, Beck, and LaForce, together with their popular modifications. It has also been used during suspension laryngoscopy and in several cases of surgery of the mouth, in each instance yielding the same gratifying success Not only is the number of instruments introduced into the mouth reduced, but the added delay, assistance needed, and trauma by the repeated introduction of the suction tube, entirely dispensed with.

The means by which the oro-pharynx is rendered free of all blood, etc., and kept surgically dry during operation in this region, is accomplished by the use of a metal tube that branches into the form of a Y, and is curved on its long axis so that it conforms approximately to the contour of the dorsum of the nose, in order to lie flat and out of the way of the anesthetist and operator. To the ends of each of the metal tubes that form the prongs of the Y, is attached a piece of rubber tubing, the size of which corresponds to a No. 19 French catheter, is about five inches in length, and each distal end has multiple small perforations one-half inch at its extremity.

These tubes are inserted one into each nostril, along the floor of the nose and pass through the naso-pharynx until they extend about one-half inch below and to each side of the uvula. To the stem, or single barrel, of the metal tube, from which the prongs of the Y spring, is attached the rubber tube that connects with any form of suction apparatus. Suction is then started and the contents of this

Figure 1.

Figure 2.

region rapidly emptied without further concern to the operator. Breathing is free, and the gurgling, bubbling sound that accompanies a general anesthetic in patients with excessive secretion of mucous, or, during operation, of escaping blood, is entirely eliminated, and the field kept dry throughout the entire operation.

404 Carter Building.

BOOK REVIEWS.

The American Year-Book of Anesthesia and Analgesia. Edited by F. H. McMechan, A. M., M. D. New York: Surgery Publishing Company.

Anesthesia is a subject with which every surgeon, regardless of his specialty, is vitally concerned, at least in its practical aspects. But, as in other departments of medicine, it is well-nigh impossible to sharply demarcate the "purely theoretical" from the "applied theoretical" or practical and, furthermore, the former of to-day may become the latter of to-morrow. The American Year-Book of Anesthesia and Analgesia has been established for the purpose of presenting the world's ultra-scientific researches as well as the current advances in the science and practice of anesthesia and analgesia. The work is so edited as to deeply interest all those who, in their work, come into any relationship with the subject of anesthesia. The scholarly and wide scope of the volume may be appreciated by mention of some of the splendid contributions contained therein: "The Physico-Chemical Theory of Anesthesia," by Ralph S. Lillie; "Blood Changes Under Anesthesia and Analgesia," by Theodore D. Casto; "The Peripheral Origin of Shock," by Frank C. Mann; "Some Consideration of Respiration in Relation to Apnea, Anoxhemia, Acapnia and Anesthesia," by Yandell Henderson; "Cardias Fibrillation and Chloroform Syncope," by A. Goodman Levy, of London. Of special interest to laryngologists are the contributions on "Ether-Oil Colonic Anesthesia," by James T. Gwathmey; "The Nasal Administration of Nitrous-Oxide-Oxygen," by F. H. McMechan, and "Further Researches in Novocain-Suprarenin Anesthesia," by Richard H. Riethmüller. The volume forms a notable addition to medical literature. Ed.

"Colds" and the Influence of the Atmosphere on the Nasal Mucous Membrane. Leonard Hill, *British Med. Jour.*, April 15, 1916.

It is generally believed that "colds" are contracted because of cold feet. Under what conditions chilling feet congest the nasal membrane? And how is it influenced by conditions of humidity and draught? Cool breezes blowing around the head, the radiant heat of the sun and a warm ground to stand on are the ideal outdoor conditions. When indoors and the feet are chilled by a draught blowing over a cold floor and the head is immersed in warm, stagnant air, the nasal membrane is swollen, congested and covered with thick secretion. Warming the feet at the fire at once relieves the congestion and obstruction. Cold feet alone do not produce these changes in the membrane. It is the indoor conditions of cold, draughty floor and warm, stagnant air around the head which produce the changes. The ideal method of warming and ventilating rooms would be an abundant radiant heat, a warm floor and agreeable movement of cool air. Stein.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

Regular Meeting, October 26, 1916.

DR. HENRY L. LYNAH, Chairman.

New Safety-Pin Closer for Endoscopic Use. H. ARROWSMITH

(To be published in a subsequent issue of THE LARYNGOSCOPE.*)*

Mouth Gag. DR. CHEVALIER JACKSON.

Dr. Jackson said that in 1895 he was working on the dog with Dr. Emma Musson and there was some difficulty in keeping the mouth open, when Dr. Musson picked up one of the Killian sponge holders with the large ring end and passed the ring around one of the large tusks of the dog's upper jaw, another around the tusk of the lower jaw, thus holding the mouth wide open. It was so simple and easy that he had the instrument maker make for him an instrument on the same lines. The one presented had some improvement over the one first made, as the ring was not complete so that a rubber ring could be slipped over it thus easing the pressure on the jaws. If the spring pressure was too great, it could readily be lessened by the thumb nut.

A Series of Bronchoscopic and Esophagoscopic Cases. (Lantern slide demonstration.) DR. CHEVALIER JACKSON.

Suspension Laryngoscopy as an Adjunct to Bronchoscopy and Esophagoscopy, Especially in Infants and Young Children. DR. ROBERT C. LYNCH (by invitation).

(To be published in a subsequent issue of THE LARYNGOSCOPE.*)*

DISCUSSION.

DR. OKADA, Otolaryngologist of the Imperial University of Tokyo (abstract from the German):

I feel highly honored to be present here this evening as a guest of this Society to be able to greet in person my distinguished colleagues in this country, as well as to be allowed the privilege of taking part in the discussion of the valuable papers by Dr. Jackson and Dr. Lynch. As regards the history, in Japan, of the direct methods of examination of the upper air passages, bronchoscopy and esophagoscopy were introduced more than ten years ago and suspension laryngoscopy direct from Killian's school was introduced more than three years ago by me and my former assistants, Prof. Dr. Kubo and Chiba and others. As in other places, so in Japan, these methods of examination have come to be regarded as indispensable in the modern practice of laryngology.

In regard to my own experiences in this respect, I first employed Killian's tubes, but later, at least since the past three years, I have been

using particularly Brünning's. For local anesthesia in adults I employed cocain applications with or without a preliminary injection of morphin; in children, general narcosis with chloroform and ether exclusively. Afterwards I began to use a combination of a subcutaneous injection of pantoponscaporamin (about 0.4 twice in three minutes) followed by cocain applications. This proved of great convenience, lessening considerably the secretion of saliva and mucus, and also allaying the nervousness of the patient. However, I do not employ this combination in children as it seems to be quite toxic for them.

The clinical material in the University Clinic in Tokyo consists mainly of the extraction of foreign bodies, either from the trachea, right bronchus or, as in most cases, from the esophagus. In addition we see cases of luetic or traumatic stenosis of the trachea, etc.

For suspension laryngoscopy the Killian apparatus is generally used in Japan, and as a rule in endolaryngeal operations of longer duration, such as diffuse or multiple papillomata of the larynx, or in the various forms of laryngeal tuberculosis, and particularly in endolaryngeal examinations and opreations in children.

There is one point in regard to suspension to which I desire to call your attention. When, in the course of a suspension, the upper wall of the ventricle of Morgagni, namely, the *rima ventricularis*, is raised upwards and laterally by means of a right-angled hook, it is possible in many cases to see the deeper parts of this region, often, however, requiring for better advantage the aid of a mirror as in subglottic laryngoscopy. In fact, in this way, I have in a number of cases been able to make early diagnosis of a latent form of small, primary adenocarcinoma or tuberculosis in the ventricle, and by early operation obtain very successful results. To this slight procedure I have given the name "ventriculoscopy laryngis."

Although we have been using the Killian apparatus we have always felt that something was lacking for the more satisfactory examination of the anterior laryngeal wall. When I shall introduce in Japan the instruments so decidedly and invaluably improved in this country, and which were demonstrated, to my good fortune, by the authors themselves this evening, I believe that we will be able to meet with greater success in future.

DR. ARROWSMITH said that every time he saw and heard Dr. Jackson he was the more impressed by his skill and resourcefulness. The cases so beautifully demonstrated this evening were such as few would encounter, and most men would refer them to Dr. Jackson for relief. It was a privilege to see these rare conditions demonstrated, and the ingenious methods whereby the foreign body impactions had been relieved would be treasured in the minds of all those who had seen them. Possibly the safety-pin which he himself had shown might have been useful in the case of the open pin with the end of the bar impacted.

Dr. Lynch's demonstration had certainly opened up new combinations of bronchoscopy with suspension larwngoscopy. Dr. Arrowsmith himself had never employed this combination as he had seen no special reason for doing so. Foreign bodies in the upper trachea or larynx can often be seized and removed with suspension laryngoscopy alone. As Dr. Lynch

had said, *complete* bronchoscpy in the Lynch positive was impossible. The modified position that had been demonstrated might be perfectly feasible, but he did not feel quite convinced that there was any advantage in doing bronchoscopy or esophagoscopy under suspension.

DR. EMIL MAYER said that Professor Okada had requested him to say to those who had not understood what had been said in the German language, that he wished to extend his hearty thanks and to express his appreciation for all the courtesies that had been extended him.

Professor Okada and his associates were the first to introduce the Killian method of bronchoscopy in Japan, and he had also made a contribution to the literature of the subject in an article entitled, "Ventroscopia Laryngealis."

In that article he described his method of raising the ventricle by means of a small blunt hook, introducing a small mirror, thus exposing the anterior as well as the posterior commissure.

Professor Okada is the bearer of greetings from the Oto-Laryngologists in Japan and their thanks for all the courtesies extended to Professor Okada, who has been the president of their association since its inception.

In regard to the papers of the evening, Dr. Mayer said that it was very difficult to say anything about the subjet of bronchoscopy in the presence of the master.

We all bow to Dr. Jackson, know how modest he is in all that he says and does, and regard with admiration a man who can say that he has been able to recover such an enormous proportion of foreign bodies after they have existed within the bronchus for a long period of time. Only those who have seen the granulation tissue that has formed around such foreign bodies know what we have to contend with in attempting their removal.

Dr. Mayer said that he was satisfied that his own results did not come anywhere near those reported by Dr. Jackson.

It was greatly to be regretted that Dr. Lynch has had to depend so largely on the cadaver in his work, instead of being where he could do suspension laryngoscopy on the living.

Dr. Lynch had omitted to say that suspension laryngoscopy permits the use of both hands, a thing that is most desirable in that often a foreign body lies so near, that it might, in the case of a safety-pin, be held firmly with the hook in one hand while with the other the pin could be closed.

Another important use of suspension laryngoscopy was that of intubation under general anesthesia. In a patient that had been under treatment in the service of the speaker at Mount Sinai Hospital this had been repeatedly done with the efficient assistance of Dr. Yankauer and Dr. Kaempfer.

The history in brief was a boy who had been wearing a tracheotomy tube, an attempt had been made by a surgeon to heal the fistula resulting, and as a consequence there was much cicatrization and the boy's condition amounted to a complete stenosis.

Under suspension the parts were rapidly divulsed with uterine forceps, an intubation tube was introduced, left in position, again removed, re-introduced after cleansing, and this procedure has been going on at intervals of about three months for over two years. It is hoped that we may

be able to dispense with an intubation tube ultimately. In the meantime this method of treating is far simpler and less annoying to the patient than a laryngostomy would be.

Suspension laryngoscopy is still in its infancy, and we are all greatly indebted to Dr. Lynch for the many devices he has added toward the perfection of the apparatus.

DR. YANKAUER expressed regret that owing to his late arrival he had not been able to hear Dr. Jackson's earlier remarks about foreign bodies. When he arrived, Dr. Jackson was speaking about foreign bodies that had remained in situ for a long time, and mentioned bronchiectasis, etc. Dr. Yankauer said that within the last two years he himself had had occasion to study a considerable number of cases of bronchiectasis with the aid of the bronchoscope. In some of these cases foreign bodies can be found, but in many of them nothing of the kind is discovered. The use of the bronchoscope had aided greatly in the study of these cases. By its employment they had been able to make the diagnosis, remove specimens, and prove the diagnosis in malignant conditions at a time when a carcinoma of the lung was still operable. They had also been able to recognize foreign bodies in cases where the pat'ent had no recollection of swallowing or inhaling anything of the kind. Moreover, they had been able to separate the bronchiectasis cases into groups and to place the indications for operation in such conditions. They had also devised a treatment for the non-operable cases which had proved quite satisfactory. These patients go on from month to month and from year to year coughing out large amounts of fetid expectoration, and up to recently it had not been possible to do anything for them; but with the aid of special apparatus it is now practicable to irritate these cases with antiseptics. After a few irrigations the secretion is diminished from ten ounces to an ounce, or half an ounce a day. He had not yet been able to follow these cases long enough to produce a permanent cure, but the patients had been made comfortable and enabled to return to their labor, and relieved from being offensive to those with whom they came in contact. In this way the bronchoscope has been of material assistance in the treatment of this unfortunate class of cases.

Dr. Yankauer said that he had been especially interested in what Dr. Lynch had said about the value of suspension laryngoscopy. In the removal of foreign bodies from the larynx, the value of suspension could not be denied, although he himself had not had occasion to use suspension laryngoscopy for this purpose. Long before the days of suspension laryngoscopy he had removed safety-pins with the pin open and straddled over the arytenoid notch and impacted in both the larynx and the pharynx. In such cases he would not hesitate to use suspension laryngoscopy.

As to the value of suspension laryngoscopy for bronchoscopy lower down he was inclined to differ with Dr. Lynch. Dr. Lynch claimed that one of the important features of suspension laryngoscopy was to enable one to pass the glottis without producing traumatism, and thereby avoid the edema which occurs after same in some cases. The reports of such cases have been made mostly by those who used the Brünning bronchoscope. It was easy to see how that happens. As everyone knows. this device has an inner and an outer tube, and where they meet there is a projec-

tion, and this projecting point will, in an adult, come about two inches below the glottis. During the removal of the foreign body the instrument must be moved about, and sometimes, with the quite sharp edge that the instrument presents, it is not surprising that there should be some trauma. Dr. Jackson had not had such edema in his post-operative work, nor had he had any. On the other hand, in his own experience, he had not seen subglottic edema following bronchoscopy in children; but he had seen a number of cases where an edema of the trachea had existed before the bronchoscopy was performed. In one case where the patient was a child of ten months, with an open safety-pin, there was such an edema that it was impossible to pass the instrument through the glottis. but he had been able to look through the tube and see the safety-pin projecting just at the birfurcation and he had passed the forceps through the swollen glottis and trachea, then opened the forceps wide enough to grasp the foreign body and succeeded in removing it very satisfactorily. He had also seen other cases of edema of the trachea which were well marked at the time of the bronchoscopy. In one case of this kind in which he forced the bronchoscope through the swollen tissue, he was compelled to do a tracheotomy, and edema was so intense that it was with great difficulty that the lumen of the trachea could be found. The so-called subglottic edema is not only in the immediate neighborhood of the vocal cords, but there is also edema of the trachea lower down. It seemed doubtful whether the use of suspension laryngoscopy for the passage of the instrument would help very much, for if the bronchoscope will not pass the glottis it is injurious to pass it anyway; while if there is no swelling of the mucous membrane it would only add to the length of the procedure to apply the suspension laryngoscope, and to remove it afterward.

Dr. Yankauer said that he could not say whether or not the employment of suspension laryngoscopy in the position indicated by Dr. Lynch would interfere with the use of the bronchoscope. It seems to him that having the patient in the suspension laryngoscope would be a disadvantage, for the bronchoscopic tube itself is an instrument for moving the foreign body about and guiding the other instruments, and the mobility of the patient's head is a very great aid; therefore, as Dr. Lynch admits, it may become necessary to remove the suspension laryngoscope in order to obtain the freedom which is necessary.

Dr. Jackson had once said that his left arm afforded the best suspension that he knew of; anyone who can hold up the infant's head can introdue a bronchoscope easily and readily, and for that reason he would be inclined to feel that the use of the suspension laryngoscope for this purpose would rather add to than diminish the complications, especially since it requires as much skill to introduce the suspension laryngoscope as to introduce the bronchoscope itself.

Nevertheless, the new position described by Dr. Lynch offers some decided advantages. Dr. Yankauer said that about two years ago he had in part constructed an apparatus based upon somewhat the same principles, but he had never completed it. As Dr. Lynch had claimed, there is a good deal to be said for this position, and he would be glad to use it some time and attempt to pass the bronchoscope in this way, and see if

he could verify for himself all the good things that had been claimed for it by Dr. Lynch.

DR. MACKENTY said that he for one was very glad indeed that Dr. Jackson had taken up permanent residence in New York, for his presence here would be a stimulus which all need in this work. We have been doing bronchoscopy more or less, but he has been doing it more, and his coming here will provide an impetus which will send us all forward much faster. It seemed very strange that in Pittsburgh they had many more cases of foreign body than we have in New York, for Dr. Jackson had told him that he had had 80 cases in one year. If Pittsburgh has eighty cases, with its population, then New York ought to have 500 cases. We have not seen them, so many of them must be unrecognized. As Dr. Jackson had said, these are not made hospital cases; the child is brought to the hospital with a history of having had a choking spell, and the interne says that it is not a hospital case, since when observed by him the child seems normal. The child is sent home and maybe dies later of an unrecognized condition. As this work develops, more attention will be paid to these conditions, and we will have more of these cases. The bronchoscope is not being used sufficiently.

Dr. MacKenty said that this year he had been fortunate enough to recognize a growth in the trachea. Later examination proved it to be specific (a gumma). He had had occasion to see two or three cases some years ago in Vienna.

Dr. Jackson's mechanical spoon would prove a great help in removing the soft foreign bodies which he had described. Everyone had seen such cases and knows how difficult they may be.

Speaking of foreign bodies in the larynx, Dr. MacKenty said that in the spring a case had been referred to him from Lake Saranac. The patient had been sent there for tuberculosis. The foreign body happened to be part of the root of a tooth which had dropped into the lung during extraction. It had been there for several months, and was well embedded in the right lower lobe bronchus. It was extracted with some difficulty on account of the granulation tissue which had formed around it. The patient had been sent to Saranac as a case of tuberculosis, and had been diagnosed there as a foreign body case. After the foreign body was extracted the patient recovered completely.

Dr. Jackson had showed a large safety-pin extracted from the esophagus. Dr. MacKenty said that he had had a similar case lately, in which he had found it impossible to dislodge the pin from the œsophagus, where it had lodged, as it extended more or less across. He cut the pin in two and so managed to extract it. That might not be considered good technique, for a piece might have been lost, but it came out without much difficulty.

The profession was greatly indebted to Dr. Lynch for his improved suspension apparatus. There was no question but that he had placed suspension laryngoscopy upon a better basis by his ingenious work. Dr. MacKenty said that he himself had been using suspension laryngoscopy since it was first introduced, and he agreed with Dr. Lynch in regard to the use of suspension laryngoscopy with children. He had seen Dr. Lynch work and knew what his technique and skill were; they are equal

to that of any man, and if he finds it necessary to use suspension in order to pass the bronchoscope in a child, we should consider what he says.

Dr. MacKenty recalled a case that came to him several years ago. The patient had a foreign body (a dime) in the larynx that had been there for eighteen months. It had lodged transversally and was extracted with very little difficulty, using the Jackson instruments. Speaking of the way that foreign bodies disappear, he told of an interesting case he had some years ago, where a small pen was located in the trachea. The instrument was introduced, and the house surgeon asked to extract it. Then something happened and the pen disappeared. A careful search failed to reveal it. Then it occurred to him that it might be in the naso-pharynx, and he looked there and found it. Then he asked the house surgeon to take it out. He inserted his finger into the naso-pharynx and said it was not there. Then he himself looked again, and could not find it—it had disappeared again. He then examined the posterior edge of the septum, which seemed abnormally thick, and passing a probe through the nose he found the pen applied by its concave surface to the posterior edge of septum.

Dr. Lynch with his ingenious mind had adapted a good idea in the Johnson method of using flexion instead of extension. There was no doubt that flexion gives a better view.

Dr. Hurd said that there was no doubt of the admiration which all felt for the technique of such men as Dr. Jackson and Dr. Lynch. He himself had been much interested in the Johnson position, used by Dr. Lynch with the suspension apparatus.

A number of years ago he had a case of a child with a foreign body in the esophagus. He could see it and take hold of it. It was a collar button, but although he could grasp it with the forceps he could not extract it. The child died that night.

Another time he had the case of a child of five years who had swallowed a jackstone. He slipped down a snare and managed to get one of the arms over the jackstone, and then turned it around and disengaged the jackstone and brought it out of the tube. That was one problem that he had solved, and since then he had had several others in which he had used the snare.

Inanother case the foreign body was a piece of chicken bone as sharp as a knife, and it had lodged in the throat of an old lady seventy years of age. She was a very intelligent woman, and had described the piece of bone very clearly. He succeeded in passing the tube without anesthesia, but found when he seized the bone with forceps that if he used traction it would break the bone and cut the esophagus badly. He therefore tickled the esophagus and started up a reverse peristalsis, and out came the bone.

These various substances in the tube offer many problems, and he had found the snare very useful at times.

Dr. Imperatori asked Dr. Jackson whether in the case with the bar-pin that he demonstrated, it would have been possible to have cut the pin with a pin-cutter. He intended to try Dr. Lynch's new method of suspension. He had found that he could not bronchoscope patients satisfactorily while suspended, and had been surprised to hear the title of the paper, but understood it now.

With regard to the use of scopolamine, which Professor Okada had referred to, employed on animals, it reduces the irritability of the superior and inferior laryngeal nerve markedly. It would seem that the use of scopolamine in patients who are to be bronchoscoped would hardly be a good idea, for the irritability of the larynx is reduced to such an extent that the cough reflex is abolished.

Suspension, as described by Dr. Lynch, should be used for surgical procedure within the larynx, and the other methods, as described by Dr. Jackson, for diagnostic purposes. For bronchoscopy and esophagoscopy the methods of Jackson or Brünning are very satisfactory. The use of the endoscope has always been so intimately associated with foreign body work, that its possibilities seems to have been neglected in the very useful field of diagnosis.

Dr. Freudenthal said he would like to make a few remarks on Dr. Lynch's paper. The use of suspension laryngoscopy for introducing the bronchoscope was one of the first experiments he made in that direction. He believed that he himself had been the first to demonstrate it at a public meeting in New York. He got the bronchoscope down to a certain point, but not beyond; then, by introducing a mouth gag and removing the suspension apparatus, he got further down. Unfortunately, he had not tried it with infants, but it would seem that it had a very great field of usefulness.

Dr. Freudenthal said he had abandoned the use of scopolamin and morphin, and other general narcotics, for a long time in doing suspension laryngoscopy, as well as bronchoscopy.

He did not quite understand the use of the instrument which Dr. Okada had spoken of, and would be very glad to have it explained.

Dr. Myles said that nothing but commendation could be uttered for the demonstrations of the evening, and that all would heartily endorse those specialists of our specialism who are making such work approximately perfect. Dr. Jackson's coming here will undoubtedly give it a needed stimulus. Perhaps in a few years Dr. Lynch would come to New York also and then we will have our five hundred or a thousand cases to report. Probably the most neglected part of our specialty consists of those chronic diseases of the trachea and bronchi which can be reached through the aperture of the vocal cords by local applications.

Dr. Jackson said that a few points had been brought up to which he felt called upon to refer. In the first place, he differed very strongly with Dr. Arrowsmith, who had referred to the methods by which he (Dr. Jackson) overcame these difficulties. Dr. Arrowsmith should have said the methods by which he attempted to overcome them. He had illustrated the methods which finally succeeded. Other methods which were tried did not succeed and often in a single case several methods were tried before success was attained, and in a few instances he did not succeed ultimately. The gentlemen might perhaps remember Edison's remark that he had been trying new things all his life, most of which would not work. That may occasionally be the case with the attempts at removing a foreign body; but if we proceed carefully we can at least avoid doing harm. The main thing is to think out carefully all possible risks, and avoid them. We should above all things avoid ruthlessly tearing out the foreign body.

Some cases remind one of the ignorant farmer who hitched a team of horses to the malpresented calf.

Dr. Jackson said he was interested in what Prof. Okada had said, but unfortunately his (Dr. Jackson's) knowledge of German was so defective that he had not been able to follow clearly all that had been said. He had followed Prof. Okada's work in the German literature as closely as he had been able to do it, and had been much interested in it, and he congratulated Dr. Okada on the excellent results.

Dr. Yankauer's work in bronchiectasis was most interesting, and he had accomplished a great deal, but even had he not been able to accomplish anything directly, it was work in a new field and was full of promise. It was like a baby. No one could predict what it was going to be. Like Dr. Arrowsmith's work in tuberculosis, when we work in new fields we may develop new things which exceed our anticipations. Dr. Jackson endorsed what Dr. Yankauer had said about subglottic or tracheal edema; it must not invariably be attributed to traumatism, though trauma is the usual cause. If it really existed before the tube was introduced, from trauma, from a foreign body or from a previous bronchoscopy, edematous stenosis might follow a gentle bronchoscopy. He then related a case, which had been cited to him by another physician, of a child with a foreign body, supposed to be a nut kernel. The child was extremely dyspneic, and the parents refused to have anything done. It was clearly an edema and not an obstruction by the foreign body. The child died from the gradually increasing edema. Had a bronchoscopy been done, the stenosis would have been attributed to the traumatism of the tube. Foreign bodies knocking about in the trachea can produce an edema and a complete closure in a child. What Dr. MacKenty had said about foreign bodies not being recognized was a valuable point. Dr. Jackson said that he had been impressed by the number of cases of foreign body recognized by the x-ray which had not been suspected, and he understood that internists are now relying very much upon the Roentgen ray to aid their diagnoses of thoracic disease. He recalled fourteen cases in which a foreign body was revealed by the x-ray, when it had been employed for the diagnosis of some other supposed condition in the chest. If a radiograph were taken of every case of chest disease, many foreign bodies would be revealed that had been unsuspected. Dr. Hurd's suggestions in regard to the cases he had spoken of were excellent. Dr. Imperatori's suggestion regarding cutting the pin was a very good one. He had himself mentioned only one of the ways by which he had succeeded. No doubt there were many other methods of doing it, and some of the present methods can be improved upon. Dr. Jackson said that he had had no experience with scopolamin, and thought its safety remained to be proven. The cough reflex is a very good thing at times; it was also annoying in some cases. Dr. Myles' suggestions and Dr. Lynch's paper were both valuable.

Dr. Lynch said that to introduce a bronchoscope without traumatism by the aid of a spatula, was the problem he tried to solve. It occurred to him that it would be much easier to do it under suspension than with the usual spatula. It was simply another form. It holds the mouth open and holds the child still. If you are dealing with a tracheal edema produced by a foreign body, you will get a chance to see that which you don't see if you are trying to work your way through by other means.

With the new position, it is very much easier to introduce the spatula, the tip does not touch the posterior pharyngeal wall. It is much easier for an untrained assistant to hold the head in the median line in order that you may control the tongue, than it is to have the assistant hold the head properly when it is hanging over the table. Again, even if you raise the patient by the aid of the vertical crane and make the crane travel toward the feet, it is surprising how the larynx comes into view, and the tissues of the neck are very much softer and have less tension.

Lastly, you don't have to use a high table. You can stand up and look down in the new position, which is in the general pathway of the trachea into the chest cavity.

The question of removing foreign bodies with either a tube or spatula is a question of personal preference, and the choice of the spatula, the suspension spatula, or the Jackson spatula for the introduction of the bronchoscope is a matter of personal preference; but with suspension laryngoscopy you have both hands free, and the left hand can serve some other purpose than that of holding up the suspension appartus. And, finally, you will diminish the manipulative traumatism to nothing if every move is under your direct guidance. To me this is the one most important point under discussion.

Regular Meeting, November 22, 1916.

Carcinoma of the Epiglottis: Removal Unler Suspension Laryngoscopy: No recurrence in Three Years. DR. EMIL MAYER.

The patient here presented is the same whose case is recorded in the transactions of the American Laryngological Association for 1913, as also in the Archiv. für Laryngologie for the same year.

He first presented himself in June, 1912, complaining of some pain in swallowing especially cold substances, and at night.

The diagnosis of edema of the uvula and leukoplakia buccalis was made.

He might not then have consulted a physician were it not for the fact that both parents had died at the same age of the patient at that time, sixty-four. A sister and brother had died of phthisis and two brothers of diabetes at approximately the same age. The patient improved somewhat under treatment, went abroad and returned in January, 1913, with the same symptoms and much nasopharyngeal catarrh.

An examination showed the same condition as previously. One month later there was an entirely new condition on the laryngeal surface of the epiglottis. A new growth was present, with a deep ulcer in the center.

A part of this was removed and referred to the pathologists, who reported cylindrical cell carcinoma.

On February 20, 1914, under ether anesthesia, the patient was suspended with the Killian apparatus, the epiglottis seized with forceps and removed entire and is here presented.

He made an uninterrupted recovery except for a rather alarming hemorrhage on the second day after operation.

Since that time nearly three years have elapsed, and the patient has experienced no discomfort whatever from the absence of his epiglottis,

swallowing all manner of foods, and with a perfectly clear and resonant voice. There has been no recurrence.

It is also unique in that the malignancy was seen in its inception, and is an added proof of what may be done for malignant disease, seen early; the case is the first in which the epiglottis was removed entire under suspension.

DISCUSSION.

DR. FREUDENTHAL said that he considered the case an important one, as it showed the importance of suspension laryngoscopy. A few days ago he had removed an epiglottis in a tuberculous patient, simply using the old big curette of Killian. The epiglottis was removed in the easiest possible way with this biting forceps, and the wound was afterwards smoothed off and healed perfectly. In cases of carcinoma of the epiglottis, such a procedure might perhaps not be advisable.

DR. KING said that he had examined the patient and wished to congratulate Dr. Mayer on the splendid result achieved. He had never before seen such a beautiful result following the removal of the epiglottis. Dr. Mayer had spoken of the severe hemorrhage occurring twenty-four hours after the operation, and it would be interesting to know by what means it was stopped.

In closing the discussion, DR. MAYER, replying to a query as to instruments used for the removal of the epiglottis entire, said they consisted of two long-handled scalpels, right and left, the entire length being ten inches, and there was a slight curve upwards of each blade.

As to the treatment of the hemorrhage which occurred on the second day, ice applications, gargle of peroxid, with compression of a large pad of gauze drawing the tongue well forward alternating, was quite sufficient to control the bleeding.

In reference to the proposed method of punching out pieces of the epiglottis, the speaker was greatly opposed to any surgical method that meant cutting into the cancerous tissue, and felt that it was the general conception that such procedure was dangerous and that the incision should go well beyond the disease, and healthy tissues only be incised.

The case in question bore a very great lesson as showing the possibility of a cure of cancer if seen early and thoroughly eradicated, nor could too much praise be given the suspension method which made it possible to remove the epiglottis entire as shown by the specimen which had been passed around among the members.

Laryngostomy for Carcinoma. DR. JOHN MCCOY.

The patient, Mr. M., age 44, was first seen on Sept. 3, 1916. He gave a history of increasing hoarseness for eighteen months, and lately, some dyspnea. On examination, his larynx showed an infiltration of its entire right side with small papillomatous projections in the region of the false cord. His doctor reported that a Wassermann test was negative. On Sept. 6, 1916, a section was removed from the infiltration and the report returned that the growth was epithelioma.

On Sept. 13, 1916, a preliminary low tracheotomy was performed. This operation disclosed the fact that the patient had an extremely deep trachea and showed the necessity for the surgeon to be provided with the

long tracheal tubes of Jackson. One week later, the complete removal of the larynx was performed, and the trachea was sutured to the neck. The patient made an uneventful recovery with one exception. On the second day after the operation, his pulse rose to 190, while his temperature was only 100½ by rectum. It was decided that this was a tachycardia due to pressure of gauze packing on the vagus. The packing was removed and within one hour the pulse rate fell to normal; otherwise his convalescence was perfectly normal and he was able to leave the hospital in four weeks.

The reason for presenting this case and the one which the writer presented last spring before this Section, is because of the wonderfully easy convalesence of these patients. This the writer attributes to three things, in addition to the usual surgical caution. These are the preliminary tracheotomy, as nearly as possible a sterilization of the mouth, and an anesthetization by rectum according to the method of Gwathmey.

DISCUSSION.

DR. MYLES said that for many years he had tried to find safer procedures in the operation of laryngectomy, especially with reference to the too frequent deaths from broncho-pneumonic infections; and he believed that Dr. McCoy's efforts in sterilizing the mouth and the adjacent cavities was a progressive step in the right direction. He believed that the free use of alcohol—with or without a small percentage of iodin—was of the greatest advantage. A 95 per cent solution of alcohol, discreetly applied with cotton applicators and followed by a nebulized spray of some oil was of great importance.

DR. THURBER said that he had had the pleasure of seeing Dr. McCoy's case a few days ago and was impressed with the prompt and easy recovery from the operation with no complications. The tracheotomy was a very low one, part of the scar still being seen on the sternum, and he had also experienced the deep position of the trachea in this region. In a case of his own, rubber tubing had to be resorted to until a long enough canula could be obtained.

Severe Recurrent Hemorhage from the Nasopharyngeal Vault of Over Twenty Years' Duration. DR. WOLFF FREUDENTHAL.

DR. FREUDENTHAL said that the patient had consulted him for the first time some twenty years ago, when she gave the following history: Mrs. B. N., 35 years of age, had had one child, which died after an operation. For the last two years she had been spitting blood, and has a sensation as if something was sticking in her throat, causing her to cough. The blood usually comes during such attacks, but sometimes occurs spontaneously. All this, independent of the season of the year.

The patient is a thin, anemic, weakly person, who was never sick before. Her sputum had been repeatedly examined for tubercle bacilli, but always with a negative result. (Neither have any tubercle bacilli been found during the course of my treatment.) On examination, the lungs were found to be perfectly free, but there was a very marked rhinitis and pharyngitis sicca, and a mass of inspissated crusts and scabs were noticed in the retropharynx. When she was regularly treated in the clinic, she lost almost no blood; but if she stayed away for a week or longer she

bled afresh and a terrible dryness occurred. At that time I could plainly see an elongated ulceration at the vault of the pharynx. She was cauterized with a 50 per cent solution of nitrate of silver, and some time later she was sent to the seashore, where the bleeding ceased entirely.

Since then she had followed Dr. Freudenthal through all the clinics he has been connected with, appearing generally about twice a year for a prolonged treatment of six weeks or so. For the last seven years she has been free from any hemorrhage, but this fall it returned with renewed vigor, leaving her in quite a weak condition. An ulceration was found on the left side. This was treated as before, and she has now regained her strength.

This case, which was published twenty years ago, was mentioned at that time in connection with Dr. Freudenthal's studies on the etiology of pulmonary tuberculosis. At that time, in examining 81 patients at the Montefiore Home, ulcerations were found seven times; besides this, there was noticed quite frequently an intense hyperemia in the naso-pharynx, which contrasted strongly in consumptives with the pale anemic condition of the posterior parts of the nose and the velum. The frequency of hemorrhages from the naso-pharynx was peculiar. While he saw them only once in tuberculous patients, they were present five times in the others. It was remarkable that in one of these six cases were tubercle bacilli found, as would be expected a priori. It could be explained only in one way. If the bacilli are not too deeply embedded in the tissues, the flow simply carries them away, thus offering a certain safety against the invasion of the same. This patient never had tuberculosis, nor does she show any symptoms thereof at the present time; but it is remarkable that she is still alive after having had such severe hemorrhages extending over so many years.

A Case of Nasal Deformity Due to the Sub-Mucous Operation Corrected by the Transplantation of Bone. DR. WILLIAM WESLEY CARTER.

This gentleman, 30 years of age, had a blow on the nose when a child which caused an obstruction to nasal respiration and some irregularity of the nasal bridge.

The case is non-specific. The patient has always enjoyed the best of health.

On April 1, 1915, he submitted to an operation for a slight irregularity of the nasal bridge, and two weeks later a submucous operation was performed by the same surgeon. This later operation was followed by an abscess which was treated for some time before it healed. Shortly afterwards he noticed a depression of the bridge. This depression increased until the deformity shown in the cast was produced.

I saw the patient for the first time on Nov. 2, 1916, one and one-half years after his operation. At this time he had a typical saddleback deformity. There was practically no support to the bridge below the ends of the nasal bones, most of the cartilaginous septum having been removed at the time of the operation, or having been destroyed by the infection. The extent of the deformity is well shown in the cast which is being passed around.

I transplanted about two inches of the ninth rib on Nov. 6, by the intranasal route. The technique of this operation I have already described before this section.

The result, you will note, is entirely satisfactory. The bone-graft is in good position, has already established its nutrient connections and is supporting the nasal bridge. The deformity is entirely corrected, and the nose is as strong as it ever was.

DISCUSSION.

DR. HARMON SMITH said that he wished to commend the outcome of Dr. Carter's surgical procedure and likewise to say that he had not yet seen any unfavorable result in the plastic work done on the nose by Dr. Carter. These remarks embodied the observation of his work over a long period of time. He wished to emphasize the fact, however, that a great many cases were now submitted to major surgery, when the subcutaneous injection of paraffin would have met the requirements. While paraffin was limited in its application, it was, nevertheless, a perfectly feasible performance when the necessary restrictions were observed. Dr. Smith said that he classed the correction of his nasal deformities into, first, those capable of being corrected by paraffin; second, those requiring the bridge splint operation, and thirdly, those which could only be corrected by the introduction of a rib.

DR. SCRUTON asked if Dr. Carter considered it necessary to anchor the superior extremity of the transplant in every instance?

A Case of Staphylococcemia. DR. W. W. CARTER.

(To be published in a subsequent issue of THE LARYNGOSCOPE.*)*

DISCUSSION.

DR. DWYER said that this was a most interesting case from many points of view, and he congratulated Dr. Carter on the way it had been worked up. The case was to him a pyemia, with the original focus in doubt,—it may have been the sinuses, the teeth, etc. The blood culture findings were noteworthy. He had had occasion to see one case of general septicemia due to pan-sinusitis with infection with the same organism, and from his statistics he found that five to ten per cent of acute mastoids were due to this organism. The hemorrhages were due to the action of the organisms and would tend to show that the case was an advanced one, when Dr. Carter saw the case first, as hemorrhages do not usually occur early. The purulent condition of the nose was interesting. The condition could not have been primary, but again it could be a secondary ulceration, just as the hemorrhages on the skin. Dr. Dwyer thought that all such cases should be placed on record.

Septal Hemorrhage: Its Cure by Submucous Elevation. DR. JOHN LESHURE.

(To be published in a subsequent issue of THE LARYNGOSCOPE.*)*

DISCUSSION.

DR. HARMON SMITH said that in his experience the necessity for operative measures, in cases of this class, had not obtained. In earlier years he had been induced to try the actual cautery but it had never worked satisfactorily, owing to the fact that he either got it too hot and it made more bleeding, or too cold, thereby not being effective. Fused nitrate of silver had never failed, however, to overcome any bleeding ulcer of the septum. He believed, moreover, that when hemorrhages occurred in elderly people, with high blood pressure, that it was nature's safety valve

and that they should be permitted to bleed for a long while before any efforts were directed towards its stoppage. He also believed it was quite possible that many brain hemorrhages were prevented by a nose bleed, thus lessening the blood pressure in the cerebral vessels.

DR. CARTER stated that on one occasion a young lady was brought to his office from a nearby village who was in almost an exsanguinated condition due to hemorrhage from a septal ulcer.

She gave a history of having had hemorrhages from this ulcer at intervals for several years. On the night before he saw her she had been bleeding in her sleep probably most of the night, and when she awakened she was hardly able to stand.

Examination showed a fairly large ulcer on the right side of the septum from which an intermittent stream of blood was coming, the septal artery being eroded. Dr. Carter did a modified submucous resection, including the ulcerated area and the surrounding cartilage. He then introduced a purse-string suture around the ulcer; this stopped the hemorrhage and in a comparatively short time the ulcer healed completely.

Dr. Carter believes that in treating ulcers of the septum, the cartilage at the base of the ulcer should always be resected for it is always involved in the inflammatory process and prevents healing.

DR. WILSON said that if he understood the doctor's paper, he stopped the hemorrhage by breaking the intima of the artery. Why was it necessary to dissect up the mucous membrane? Why could it not be done by pressure upon the septum?

In reference to nose bleed from high pressure, Dr. Wilson said that he had seen several such cases; in one case when the pressure was 100, he did not attempt to stop it, and the man, who was 68 years old, lived for a year afterward and then died of apoplexy.

DR. KING said that when, several years ago, he had read Dr. Thompson's paper on "The Submucous Resection as a Means of Curing Septal Hemorrhage," published in THE LARYNGOSCOPE, it seemed to him that it was not an unusual procedure, as he himself had performed several such operations on patients who had come to him for relief from nose bleeding. In such cases, he had found nasal obstruction due to a deflected septum. The lack of air entering the nasal chambers,—in other words, the nasal obstruction,—had caused the patient to pick the nose and thus produce excoriation of septal blood vessels with consequent hemorrhage. Frequently these patients had been unconscious of picking the nose, and it would seem that the nasal obstruction would cause them to pick the nose unconsciously at night while sleeping. The bleeding in such cases is only one of the consequences of nasal obstruction, and if there are no contra-indications the submucous resection should be done to relieve the obstruction. When the obstruction is removed, the patient will no longer pick the nose, and consequently, as the cause of the bleeding has been removed, the hemorrhage will have been stopped.

In such cases as he had described, where the bleeding was a sequel of nasal obstruction, the submucous resection seems a rational procedure.

DR. SCRUTON said that the criticism was directed by a misunderstanding concerning the type of septal hemorrhage that Dr. Leshure's technique was intended to control. It was quite apparent that the method recommended in the paper was not intended to apply to hemorrhage from a

given point but to wide-spread oozing, and it seemed to offer a distinct advantage over cauterization in that it preserved the membrane.

Inflatable Rubber Bag for Intranasal Use. Presented by DR. A. L. BECK.

The members were favorably impressed by the ingenious device, many giving Dr. Beck personal assurance that they would give it immediate trial in their practice.

An Interesting Cut-Throat Case. DR. WILLIAM W. CARTER.

(To be published in a subsequent issue of THE LARYNGOSCOPE.*)*

DISCUSSION.

DR. EMIL MAYER said that no two cases of throat cut are ever quite alike, and each one must, therefore, be treated in accordance with the injury sustained.

The speaker mentioned a case which he had seen recently in Mount Sinai Hospital, in which the epiglottis had been cut through and evidently sloughed away.

The arytenoids could be seen on attempts at phonation, and the entrance to the esophagus. The speaker was able to introduce a large sized Schröter tube into the larynx and trachea, and phonation was possible.

A tracheotomy had been done as also a gastrostomy, which latter solved the feeding problem.

It was proposed to introduce a piece of fascia so as to prevent too much drawing in of the vicatrix, and complete recovery was anticipated.

In all these "cut throat cases" it is rather remarkable how they succeed in cutting in the wrong place to achieve the end that they desire, as also the extreme eagerness with which they afterward desire to recover from their self-inflicted wounds.

Treatment of Graves' Disease by the Roentgen Ray. M. SEYMOUR, *Boston Med. and Surg. Jour.*, Oct. 19, 1916.

Eighty out of 144 cases were given at least two treatments with the Roentgen ray and all, except seven, have shown improvement, as evidenced by gain in weight and lowering of the pulse rate. The advantages of the Roentgen ray treatment are that there are no fatalities, no resulting scars, absence of pain and if the treatment is unsuccessful operation can be done with less risk because of the favorable action of the rays on the thymus gland. P. F.

PHILADELPHIA LARYNGOLOGICAL SOCIETY.

Meeting of January 2, 1917.

DR. SIDNEY L. OLSHO, *Reporter.*

Epithelioma of the Ethmoid. DR. GEORGE M. COATES.

DR. GEORGE M. COATES presented a female patient, age 35, who first came under observation November 13, 1916, with a swelling on the right side of the nose, first noticed two years previously, and having gradually increased in size since that time. There has been progressive loss of body weight and loss of the senses of taste and smell. Both nasal passages are occluded. Marked deafness with annoying tinnitis has been present during the past week and non-productive cough during the past two weeks. There have been no night sweats. She has had expistaxis from the right nostril every few days for the last year, bleeding profusely sometimes.

On transillumination, all of the sinuses are clear excepting the ethmoids. Examination shows the septum pushed to the left and the entire right nostril occluded by a soft, friable mass, apparently originating in the ethmoid region.

On November 15, this mass was removed with the snare and punch forceps. Bleeding was free but was controlled. The mass removed was the size of a pigeon's egg and consisted of a friable vascular mass, in parts quite firm. Histologic diagnosis: Basal cell epithelioma of the ethmoid.

Spindle Cell Sarcoma of the Ethmoid Involving the Supraorbital Soft Tissues and the Antrum. DR. ROSS H. SKILLERN.

DR. ROSS H. SKILLERN presented a patient, Miss M., age 39. She first noticed a painful swelling in the region of the left lachrymal duct in August, 1916. On external pressure a thin liquid exuded from the left nostril. The supraorbital region was soon involved. The left side of the nose gradually became occluded. She has severe supraorbital headaches.

Examination of the nose, December 1, 1916, showed the left side of the nose to be occluded with polyps, apparently originating in the ethmoid region. The supraorbital region is protruding. X-ray examination showed a mass in the ethmoid region with destruction of cell walls. Clinical diagnosis: Hypertrophic fronto-ethmoidal sinusitis.

The polyps were first removed intranasally and the ethmoidal cells destroyed. Portions were sent to the patrological laboratory.

One week later an external opening was made. The entire ethmoidal labyrinth was found to be degenerated into a large tumor mass, infiltrating upward into the supraorbital soft tissues and downward into and filling the antrum. The incision was closed. The histologic diagnosis is spindle cell sarcoma.

Giant Cell Sarcoma of Maxillary Sinus. DR. ROBERT F. RIDPATH.

DR. ROBERT F. RIDPATH presented a patient, male, age 53, of medium stature, considerably emaciated. History of a blow on the cheek, by a heavy board, two years ago. Considerable subsequent swelling but no

skin abrasion. After two months a lump formed, under the skin, which was treated by x-ray at weekly intervals for seven months, without relief, but with a consequent breaking down of the skin and the formation of a fistular opening into the antrum. A radical Denker operation was indicated and performed, September 29, 1916. The tissue did not heal after operation but has continued to slough and necrose. The fistulous opening has enlarged and will admit a thumb. Histological diagnosis: Giant cell sarcoma of maxillary sinus.

Carcinoma of Lingual Tonsil and Epiglottis. DR. JAMES A. BABBITT.

DR. JAMES A. BABBITT presented a patient, O. H. F., male, age 59, who came under observation December 5, 1916. He complained of sore throat, dysphagia, pain in the larynx radiating to the ears, frequent hoarseness, at times aphonia and the presence of a lump on the left side of the neck.

The lump, when first noticed, October, 1916, was small and soft, but in one month, it had become larger and harder. A small lump is also noticed on the right side of the neck. There has been no loss of weight or other significant symptom. A secondary anemia, however, is present. Tuberculosis and syphilis were excluded. Alcohol has been used to excess up to five years ago, smoking tobacco to excess until four months ago.

Examination of the left side of the neck shows a flat, diffuse, indurated area, the size of a half dollar, just over the middle of the sterno-cleido-mastoid muscle and a hardness of the submaxillary gland, but no nodules. The right submaxillary region shows some induration.

Examination of the throat shows a nodular, non-ulcerated mass, involving the lingual tonsil and epiglottis and extending downward into the larynx, occluding a view of the cords. The clinical diagnosis and the consensus of opinion at the meeting is that the condition is one of carcinoma.

Mycosis Fungoides Involving the Tonsils, Soft Palate and Uvula. DR. MATTHEW S. ERSNER.

DR. MATTHEW S. ERSNER presented a patient, H. P., male, age 34, colored. Five years ago the right tonsil became swollen and after several weeks exuded a muco-sero-pus. In the course of the subsequent six months, the following structures were involved, uvula, left tonsil, right and left tonsillar pillars.

In the last five months, deep ulcerations and excoriations developed on the floor of the mouth, spreading to the outer edge of the tongue.

The soft palate is edematous, of pale, glassy appearance. The other mentioned structures are all, more or less matted together in a granulomatous mass, with polypoid structures hanging down into the pharynx. From time to time, a polypoid mass has sloughed off. On six occasions in the last four years, hemorrhages lasting from one-half to twenty-four hours followed. The clinical picture resembles that of syphilis.

Blood-serum, bacteriologic and biologic studies were made, but failed to establish a diagnosis of syphilis or tuberculosis. There has been no glandular enlargement and no loss of body weight.

Finally a section was removed for histologic study. In the sections, certain areas resemble tuberculosis; others, small, round-cell sarcoma. Diagnosis after study by Drs. Kolmer, Smith and MacFarland, of the University of Pennsylvania: Granulomata mycoses fungoides.

AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY,

SECTION ON LARYNGOLOGY AND RHINOLOGY.

Twenty-second Annual Meeting, May 5 and 6, 1916.

White Sulphur Springs, West Virginia.

The President, DR. S. MACCUEN SMITH, Philadelphia, *Presiding.*

Tracheo-Bronchial Syphilis, With Report of an Unusual Case. DR. HUBERT ARROWSMITH, Brooklyn, N. Y.

After reviewing the cases recorded in literature, reported the following case of tracheo-bronchial syphilis: The patient, a man, 44 years of age, was admitted to the hospital, November 10, 1915, complaining of shortness of breath and cough, with paroxysmal exacerbations of both. Venereal infection denied. Tubercle bacilli not found in sputum. Urine normal. Hemoglobin, 80 per cent; erythrocytes, 4,928,000; leucocytes, 13,000, with 63 per cent polymorphonuclears; 27 per cent lymphocytes; 7 per cent large mononuclears; 2 per cent transitionals; 1 per cent eosinophiles. Wassermann test was 4 plus. There was irregular fever, from 101 to 104 degrees. Protoiodid of mercury, one-fourth gr. t. i. d., was given, being changed, after a short time, to mercury salicylate administered intramuscularly, with the potassium iodid in increasing doses. Digitalis was necessary most of the time.

Bronchoscopy was attempted December 1, but was abandoned for fear persistence might precipitate an attack of dyspnea, several attacks of which the patient had had since admission. On December 4, against advice, the man left the hospital, but was admitted again, January 4, 1916, in much the same condition as before. From the symptoms and the x-ray examination the diagnosis of broncho-pneumonia was made, and bronchoscopy advised. On January 10, under oil-ether colonic anesthesia (Gwathmey method) direct laryngoscopy showed no lesion of the larynx. A 7 mm. Jackson cronchoscope was passed and a definite and symmetrical diminution of the tracheal lumen was encountered, the tube being held snugly as soon as it entered the trachea, a certain amount of pressure being necessary to advance it. The obstruction was not due to infiltration or edema of the mucous membrane. There was no suggestion of the tracheal rings, and the carina was identified with some difficulty. Considerable pressure was required to enter the primary bronchi, and the orifices of the secondary bronchi were only suggested. This stenosis was absolutely uniform and symmetrical throughout. There was a decided sense of unyielding resistance outside of the mucous membrane. There were no localized constrictions or dilatations, no ulcerations, no scars. Diffuse indurative peri-tracheo-bronchitis seemed to fully describe the conditions found.

The patient was then put upon inunctions of mercury ointment, beginning with half a dram a day and increasing until signs of salivation

appeared. Increasing doses of potassium iodid were given (salvarsan being unattainable at the time). The patient's response to the treatment was prompt, and by February 3, 1916, he was up, with very little dyspnea, but still considerable cough. On February 22, he began to cough more, fever and dyspnea returned, and his condition became more rapidly worse, until March 1, when he died. Autopsy not permitted.

The great value of the Gwathmey oil-ether colonic anesthesia in such cases was emphasized.

DISCUSSION.

DR. CHARLES JOHNSTONE IMPERATORI, New York City, opening the discussion, said: "I wish to express my thanks to Dr. Arrowsmith for the honor in asking me to open the discussion on his report of this very interesting case.

"I had the opportunity of endoscoping the case with him and his description of the findings are very exact. One could hardly imagine that the bronchoscope was within the trachea. The appearance of the mucous membrane, being more that of the esophagus. The rings of the trachea could not be made out, and one had to orient himself by identifying the carina. The breath of the patient coming through the bronchoscope, of course, assisted materially. The Gwathmey ether-oil method of anesthesia was ideal in this case.

"Regarding the pathology of this condition, very little can be found in the literature. Adami gives but a few lines to it, and considers the condition very rare. From a perusal of Conner's article, the pathological-histological report of the sections that are of interest to us, showed the mucosa of the trachea and bronchi to be in a hyperplastic state and thrown into polypoid folds or elevations, while the bronchial and tracheal wall was in some places entirely replaced by fibrous tissue, the diagnosis being a diffuse indurative peribronchitis and endobronchitis.

"Symptoms are rather vague and the physical signs fail to give any clue of the marked inspiratory type of dyspnea. Paroxysmal dyspnea at some time in the course of the disease with marked suffocative attacks seem to be characteristic.

"Diagnosis: Paryoxsmal attacks of dyspnea and as the disease advances marked dyspnea, coupled with negative cardiac and renal complications, and with or without positive laryngeal findings, plus a positive Wassermann, should lead one to suspect endobronchial obstruction; this, in turn, may be definitely identified by endoscopy.

"Treatment: As Lues does not confer immunity against acute iodism, potasssium iodid alone should be given with caution. As we know that iodin is remotely irritant to mucous membranes and an inflammatory edema of the larynx, trachea or bronchi may be superinduced on an already irritated respiratory mucous membrane. Salvarsan or its substitutes would have seemed to be the elective method of treatment in this case, followed by the use of mercury, either by inunction or injection."

DR. ROBERT LEVY, Denver, Colo., thought Dr. Arrowsmith's paper should stimulate inquiry along the lines suggested. No doubt many cases of tracheal and bronchial syphilis had passed unnoticed. It was true that the use of the bronchoscope would doubtless call attention to conditions in the trachea and bronchi which formerly were not recognized,—a point which Dr. Arrowsmith probably wished to emphasize. The placing on

record of such cases was important. Cases of ulceration of the trachea had been reported from time to time. He recalled a case of ulceration at the bifurcation of the trachea, with cough, in a policeman. Syphilis was suspected, but the man passed out of his care and the subsequent history could not be reported. In a case of tracheo-esophageal syphilis reported at the meeting of the Middle and Western Sections at St. Louis, it was fair to assume that perforation of the trachea was due to syphilitis ulceration.

DR. ROBERT CLYDE LYNCH, New Orleans, La., had had an experience with tracheo-bronchial syphilis limited to two cases. One case was that of a marine man who had a tracheal fistula, a gumma which ulcerated just below the thyroid gland. The rings of the trachea were exposed as if one had done a very bad tracheotomy operation. There was a definite history of syphilis. The fistula closed and the trachea had remained patulous since. The second case was at the Eye and Ear Hospital in New Orleans. It was the third stage of syphilis, and the gumma involved the fossa of Rosenmüller. Spirochetes were removed from the surface in this location, and a section removed showed evidence of gumatous infiltration. In consultation it was discovered that between the upper and the lower lobes of the right lung there was a dull or quite flat area, quite definite in outline. This was a gumma. In the lower lobe of the right lung there was apparently complete absence of stem bronchi; in other words, there were not so many offshoots from the bronchus as ordinarily found by x-ray examination. This patient had begun to have hemoptysis. Internists in New Orleans had observed a number of cases of gumma of the lungs of a pronounced type, in which no tubercle bacilli were found, in which the area of dullness was not limited to the lower lobe, and in which the polymorphonuclear increase was not as ordinarily observed. The importance of a closer relationship, bronchoscopically, between internist and laryngologist was emphasized.

DR. CHEVALIER JACKSON, Pittsburgh, Pa., thought it was very fortunate indeed for medical science in general and for bronchoscopy in particular, that this case fell under the observation of such acute and accurate observers as Dr. Arrowsmith and Dr. Imperatori. His personal observations in lues of the tracheo-bronchial tree have been three, and they have been published. In none of them, however, was there such a serious condition as that observed by Dr. Arrowsmith. All of them were mild cases or lesion relics, and all of them recovered. Dr. Boyce, who had had a large fluoroscopic experience, stated, "I have seen through the fluoroscope a ragged shadow to the right of the vertebra at the level of the heart and extending out about two inches in a number of luetic cases and I believe it has some diagnostic value. Beginning malignancy is the only thing likely to be confused with it." He, the speaker, would like to ask Dr. Arrowsmith in his reply to state whether he believed the quick response to specific treatment with the great relief of the dyspnea could not have been due to the relief of some condition other than the indurative peritracheobronchitis; which, it seemed to him, would be like the luetic fibrotic conditions seen in the larynx and which are not amenable to any form of specific treatment. He heartily agreed with Dr. Imperattori's remarks on postassium iodid; though it was clearly indicated here and doubtless was responsible for the improvement. He believed that every-

thing was done in this case that could possibly have been done, under the circumstances, to relieve the patient. He heartily endorsed Dr. Arrowsmith's suggestion as to calling the attention of internists to the value of bronchoscopy in disease. The utility of the work, both for diagnosis and treatment, was only in its infancy, and he felt that if bronchoscopy was ever to receive its just measure of recognition by the internist, bronchscopists would have to do the work with local anesthesia, in adults, none in children; because the greatest usefulness would be in the early stages in which the relatively mild symptoms of the patient would never seem to the internist to justify general anesthesia. For foreign body work the endoscopist should use whatever form of anesthesia he may think will give him the best results, but in bronchoscopy for disease, general anesthesia was a bar to investigation of any except the most desperate cases.

Dr. John A. Thompson, Cincinnati, Ohio, called attention to the well known fact that a combination of local with general treatment of syphilis of the upper air passages would give prompter results than either alone. In his first case, reported twenty years ago, gummata of the lower lobe of the right lung, the patient had a temperature of 104 degrees, she was expectorating a quart of offensive fluid daily, and was going on rapidly to a fatal end. Internal treatment had no effect, and intratracheal injections were employed. In three weeks the temperature was normal, and in three months the patient had returned to normal health. In such cases as that reported by the essayist intratracheal injections would have relieved the intense dyspnea.

Dr. Eugene L. Vansant, Philadelphia, Pa., recalled a case of syphilis of the bronchi and lungs, with absence of tubercle bacilli, with widely disseminated symptoms in the lungs, without emaciation,—points which may indicate syphilis,—in which recovery followed energetic mixed treatment.

Dr. Thomas H. Halsted, Syracuse, N. Y., had had three cases of tracheobronchial syphilis, two of which had come under his observation before he had begun to use the bronchoscope. Both of these patients were cyanotic and about to succumb. Recovery followed tracheotomy and antispecific treatment. In the third case the patient, a woman of 45 years of age, was cyanotic and semiconscious when first seen by him. She was sent to the hospital, and bronchoscopy was performed. There was ulceration at the tracheo-bronchial junction. This area was covered with crusts similar to those seen in atrophic rhinitis. Nitrate of silver was applied to the ulcer, and general treatment given. Six months later the patient had another attack of dyspnea and died. Intratracheal injections of vaselin or albolen were used to soften the crusts.

Dr. Lee M. Hurd, New York City, cited the case of a man about 50 years of age, who, a short time before, had been sent to him with the history of spasmodic cough. He had had a number of x-ray examinations, which revealed nothing except a peculiar area in one lung. The internist could find no cause for this cough. Bronchoscopy showed that the right bronchus was intensely congested at its junction with the trachea. There was no history of syphilis. In the meantime he developed a gumma on the scalp. In such cases the bronchoscope would make the diagnosis where the internist could not. He had had another case, in a boy about three years old, who had a syphilitic gumma of the trachea. He passed

an intubating tube three and a half inches long, holding it in place with a clamp. This was worn for four or five months.

DR. JACKSON, at the request of the president, spoke of the legal aspect of the bronchoscopic examination, in cases anesthetized for other purposes and in whom bronchoscopy was not indicated. He had had an experience years ago which had caused him to go into the legal phases of consent to operation. He did a tracheotomy on a child whose heart had stopped. He had gotten consent to the mastoid operation, but the father brought suit on the ground that the tracheotomy was done without consent. The suit hung over his head for two years, and caused him a good deal of worry. Finally the man's attorney, who happened not to be a "shyster," called on him about the case and was told that six medical men were present, all of whom would testify that the operation was necessary to save the patient's life. The attorney advised his client that he had no ground for action, especially as the child was alive and well. Since that time he had always insisted on written consent, covering everything that might be deemed necessary, by himself or his associates. He would not presume on this account to do a purely experimental operation or one not urgently necessary. If the parents were accessible he would ask their consent to any additional procedure if time permitted; but often the children were left at the hospitals by their parents. One would certainly be subject to suit for malpractice for an experimental operation, or for any operation that is not necessary. Doing anything merely for the development of one's technic was a matter for one's own conscience.

DR. ARROWSMITH, in closing the discussion, said he attributed the unpleasant after-effects of the iodins to the fact that the initial dose was too large. Answering Dr. Jackson, he said there was no congestion or swelling of the soft parts, and apparently no syphilitic lesion there. Undoubtedly the prompt yielding was in part due to the mental effect of the treatment. The mere mechanical stretching of the trachea and bronchi temporarily relieved the patient. Dr. Thompson's suggestion was a good one, but he did not think local medication would have done any good in the case reported. He had used intratracheal injections for twenty years in suitable cases. He employed for this purpose vegetable oils, medicating them in various ways. Mineral oils were not satisfactory in these cases.

DR. CHEVALIER JACKSON, Pittsburgh, Pa., had been very much interested, three years ago, in a paper read by Dr. Lynah before the New York Academy of Medicine on the endotracheal removal of foreign body cases of diphtheritic membrane. The speaker had not himself seen such a case, though he had encountered two cases of endotracheal diphtheria, and many cases sent in for post-diphtheritic laryngeal stenosis. There should be connected with institutions where diphtheria is treated, men competent to deal with these cases by endoscopic methods, and they should have and use direct intubation instruments of Mosher and Lynah. Direct laryngoscopy should be used for diagnosis and treatment, and without anesthesia, general or local. It was out of the question to get an internist to consent to anesthetize a patient in cases of suspected laryngeal diphtheria. Bronchoscopy was not the severe ordeal that some had supposed, as was evidenced by the report of Dr. Lynah that some of these patients went to sleep on the table with bronchoscope *in situ*.

Tracheo-Bronchial Diphtheria (With Lantern Slide Demonstration). Dr. Henry Lowndes Lynah, New York City.

(Published in the October, 1916, issue of The Laryngoscope.)

DISCUSSION.

Dr. Harris P. Mosher, Boston, Mass., had had only two cases, as compared with the thirty-six reported by Dr. Lynah, but in a measure he had gone over the same ground. In his own two cases, the one which was tracheotomized was one which recovered. Both were operated upon without anesthesia. To have the tracheotomized patient recover was rather contrary to the rule. The membrane, in that case, was removed with forceps. When he had finished with these two cases he devised an instrument for sucking out the membrane, but it had never been used. It was striking, as Dr. Lynah had pointed out, and as Dr. Jackson had emphasized, that these patients go to sleep on the table as soon as the obstruction is relieved.

Dr. Hubert Arrowsmith, Brooklyn, N. Y., had stopped doing intubations several years ago. Dr. Lynah's presentation of this work deserved the praise of laryngologists all over the world.

Dr. Ross Hall Skillern, Philadelphia, Pa., reported a curious case of diphtheritic membrane in the lung simulating a foreign body, diagnosed and removed by the bronchoscope.

(Published on page 100 in the present issue of The Laryngoscope.*)*

Dr. J. B. Greene, Asheville, N. C., said that he was a follower of Place, of Boston, in the use of large doses of antitoxin. He was also a follower of Park, of New York, in the advocacy of the intravenous administration of antitoxin in severe cases of diphtheria such as the essayist had described. It was difficult to see why there should be greater shock following the intravenous administration of antitoxin, for the pain was certainly less,—an important element in shock. In his experience he had seen no evidence of shock. There was experienced, at times, particularly in very young children, difficulty in finding the vein with the needle. In all cases of antitoxin administration it was well to ask if there was a history of asthma, hay fever, or sensitiveness to the emanations from the horse.

Dr. E. Fletcher Ingals, Chicago, Ill., had had several cases in which the patient's life had been saved by tracheotomy, performed without anesthesia, and these patients had told him afterward that they suffered none or very little from the operation. Several of these patients were so far gone that he was sure they felt nothing.

Dr. B. R. Shurly, Detroit, Mich., had had an experience of five years with several hundred intubations. The wonderful progress that had been made in the use of antitoxin, with the technic becoming more and more perfect, with the earlier and earlier use and the larger and larger doses of antitoxin, had reduced the mortality so that the last series of cases showed a mortality of only twenty per cent. It was within that twenty per cent that one found the cases of endotracheal diphtheria, with extension of the membrane and the development of broncho-pneumonia, and these were the patients who would be relieved and whose lives would be saved by the method which Dr. Lynah had presented. The development of bronchoscopy and its use in diphtheria hospitals should be a specialty within itself. These little children, with lowered vitality

and weakened hearts, must be managed with great gentleness, the operation must be very quickly performed, and the technic must be carefully considered. He had many intubation cases in which casts of the bronchi and trachea had been expelled after the removal of the membrane. The painting of the bronchi and trachea with antitoxin after the removal of the casts, to prevent the reformation of the membrane, was a distinct advance and should be tried.

DR. JOHN F. BARNHILL, Indianapolis, Ind., emphasized the fact that these membranes are foreign bodies, and as such should be removed. Tracheotomy, in these cases, was not an entirely hopeless matter. He had had seven cases in one year in which he resorted to tracheotomy, with six recoveries. In the fatal case death was due to the failure of the nurse to properly remove the tube. These cases were not always found in the best hospitals, and sometimes it was necessary to employ tracheotomy. It was the next best thing to the method proposed by Dr. Lynah.

DR. ROBERT CLYDE LYNCH, New Orleans, La., had had forty-two tracheotomies with no deaths due to the tracheotomy. One was done in a taxicab. The patient had coughed up the intubation tube, and while being taken to the hospital, where something more could be done for him, he stopped breathing. The taxicab was halted, fortunately, under an electric light and tracheotomy immediately performed. The patient was still living. In another case, in which the membrane involved the bronchi, he would put in the bronchoscope and pick out a piece of the membrane whenever breathing was obstructed. Six times during the week in which he slept in the room with the patient, the boy was perfectly dead, and each time he brought him back to life by removing pieces of the membrane which had come in front of the tube. This child, also, was living. In all these cases except the taxicab case the operation was performed in the hospital, with every possible care. In none was there subsequent obstruction or stenosis, and all had recovered with good voices. In view of these facts, it seemed to him that tracheotomy did not present 100 per cent mortality. He operated entirely without anesthesia. He used antitoxin intravenously when he could back it up with aromatic spirits of ammonia or caffeine, followed by strychnia.

DR. ARTHUR I. WEIL, New Orleans, La., said in many instances the facilities for bronchoscopy were very limited, and in such cases a good tracheotomy was better than an unsatisfactory bronchoscopy. He had had only one death, in a case in which the membrane extended down into the bronchi. Regarding the impunity with which bronchoscopy could be done under local anesthesia or with none at all, it was surprising to see how easily the instrument could be passed. Following the work of Dr. Skillern, he had made it a routine practice to examine all cases with obscure symptoms. It had been surprising to him to see how easily patients in clinics would sit down on the stool and take the tube without any discomfort. He thought bronchoscopy was entirely too little employed in ambulatory clinics.

DR. LYNAH, in closing the discussion, said the point made by Dr. Greene, with reference to anaphylaxis, was well taken. Some patients after a subcutaneous injection of antitoxin would have a severe reaction and very stormy symptoms of anaphylactic shock, but he had never seen a fatal result follow the subcutaneous method. Reactions were equally se-

vere in some cases by the intramuscular injection, but the shock was nothing in comparison to the intravenous injection, which was at times exceedingly dangerous and followed by fatal termination. Large doses of antitoxin were the rule in all of the hospitals at the present time, but the general condition of the patient and the duration of illness should be taken into consideration and the dose judged accordingly. Formerly, at the Willard Parker Hospital, Dr. W. H. Park advocated small doses of antitoxin frequently repeated at intervals of twelve to eighteen hours, until the patient showed signs of improvement; then later on he followed the method at Boston City Hospital and gave large doses of 20,000 to 30,000 units in severe cases, one initial dose, and recommended the repetition of the dose was not necessary, while to-day he believed that an intravenous injection of 10,000 units of antitoxin was sufficient for the great majority of cases. The speaker believed in intravenous injection of antitoxin in selected cases, but it was certainly contraindicated in cases of long standing, in whom there was marked prostration at the time of admission to the hospital. Early in the disease the patient was stimulated by the toxemia and intravenous injection of antitoxin would do no harm, the element of shock being soon overcome; but later in the disease of four or five days' duration, accompanied by profound prostration, the further element of shock added by the intravenous injection was not only harmful but at times was followed by fatal result.

Replying to Dr. Barnhill, Dr. Lynah said he was not speaking of the laryngeal type, but of the tracheo-bronchial involvement, and these were the cases that died after tracheotomy. Not only the tertiary bronchi and bronchicles, but the lung as well, were involved in these cases. The necrotic lung would certainly not recover.

He had been interested in Dr. Skillern's case, but he did not know that the membrane could last so long and the case recover without antitoxin.

Referring to Dr. Lynch's use of caffeine, so far as he knew this was one of the most insoluble of drugs and was of little use hypodermically. He preferred the use of small doses of morphia for the stimulating effect and also to counteract shock. He also used camphor in oil. He had gone on record more than once in saying that any slowly progressive dyspnea should be looked upon with considerable degree of apprehension, and when one was unable to account for the cause of the dyspnea a direct laryngeal and bronchoscopic examination should be made. While it was not a difficult procedure to remove the mechanical obstructing foreign body membrane, the whole credit for the ultimate outcome of the cases belonged entirely to the house staff and nurses of the hospital.

Bronchoscopic Postulates. DR. CHEVALIER JACKSON, Pittsburgh, Pa.

DR. CHEVALIER JACKSON, Pittsburgh, Pa., offered the following suggestions in the form of postulates, emphasizing that they are merely tentative, given for the purpose of eliciting discussion, and not to be taken as rules to be followed:

1. Anesthesia should be left to the choice of the operator in the particular case. Diagnostic direct laryngoscopy in children should be done without anesthesia, general or local. Cocain and morphin are dangerous in very young children. Novocain and alypin may be used.

2. An antiseptic technic should be carried out as thoroughly as in laparotomy.

3. Bronchoscopy, ordinarily, should not be continued longer than thirty minutes in one under twelve years of age. Unless for urgent reasons, bronchoscopy should not be repeated at shorter intervals than five days in children under five years of age. Both bronchoscopy and esophagoscopy may be done in the new born, if necessary, the duration not exceeding 15 minutes, except in case of bronchoscopy for the maintenance of respiration.

4. Four or more very careful twenty-minute bronchoscopies, at intervals of a few days, in an infant, may be fatal, no matter how carefully done.

5. There are no absolute contraindications to bronchoscopy or esophagoscopy in foreign-body cases. Many conditions (aneurysm, for example) may render endoscopy for disease inadvisable, and in foreign-body cases may justify its postponement.

7. The primary requisite for bronchoscopy is gentleness.

8. A foreign body should not be pulled upon until the bronchoscopist has a clear idea of the mechanical problem, nor until he is certain that the foreign body is free to be moved without inflicting trauma.

9. It is dangerous to pull on a tack, pin, needle, nail, or other sharp pointed object until the point is in the tube-mouth. Hasty and violent attempts at removal are unjustifiable, especially since in most cases of foreign body in the bronchi the patient will live many months if no trauma is caused.

10. Full-curved hooks are to be used with the greatest caution, lest they catch inextricably in branch bronchi.

11. Laceration or perforation of the thoracic esophagus is almost invariably fatal.

12. The motto of the bronchoscopist should be, "If I can do no good, I will at least do no harm."

Accidents in Bronchoscopy. DR. HENRY HALL FORBES, New York City.

DR. HENRY HALL FORBES, New York City, in discussing his own experience and that of other operators with accidents in bronchoscopy, arranged the cases under the following divisions: (1) Accidents during the anesthetic stage, or previous to the actual instrumentation. (2) Accidents during the instrumentation either for operation or examination. (3) Accidents occurring in the post-operative stage of the work. In addition to these accidents to the patient, he detailed two cases of accident to the operator, in one of which a cocain solution being used in a bronchoscopic examination was coughed into the eye of the operator, and in the other a sharp steel lace pin was coughed out through a bronchoscopy tube with the force of a dart from an air rifle, hitting the lens of the operator's glasses.

Sudden Death During Bronchoscopy. A Preliminary Report of a Physiological Study. DR. CHARLES JOHNSTONE IMPERATORI, New York City. (Published in the November, 1916, issue of THE LARYNGOSCOPE.)

DISCUSSION.

DR. LEE M. HURD, New York City, emphasized the fact that the vagal reflex varies widely in different individuals. In the average it was a very

sensitive reflex; simply extending the head would produce slowing of the heart beat and raising of the blood pressure. There was vagal irritation, to a greater or less degree, from the time the head was extended for passing the bronchoscope, but this was increased as the tube passed over the base of the tongue, and still more increased as the tube entered the larynx, trachea and bronchi. Atropin or hyoscin and morphin would control the vagal reflex, and should be used in appropriate cases, but this did not give license to rough usage of the parts.

Children, as Dr. Jackson had repeatedly asserted, could have the tubes passed better without anesthesia. The speaker presented a pearl button, two centimeters in diameter, which was removed from the upper portion of the esophagus of a child of two years old without anesthesia and also without distress. The fatal case reported by Dr. Imperatori probably was due to laceration or rupture of a bronchus from clumsy use of the tube.

As Moynihan has said, "The perfect surgeon must have the heart of a lion and the hand of a lady; never the claws of a lion and the heart of a sheep."

Dr. Stanton A. Friedberg, Chicago, Ill., classified accidents associated with bronchoscopy as: (1) Trauma, such as the too forcible introduction of the speculum or endoscope resulting in supra- or sub-glottic edema; forceps with teeth catching in the mucous membrane; and perforation of a bronchus. (2) Mechanical accidents, due to defective or deficient apparatus. (3) Accidents due to anesthesia. Most of the accidents reported were due to general anesthesia. He had had one death in which the anesthetic was given by an expert. The patient was a child of two years of age, with an impacted bean in the left bronchus. The bean could not be removed easily, and during the manipulation the child collapsed and could not be revived. He heartily agreed with Dr. Jackson regarding the question of anesthesia. He had ceased to use general anesthesia in patients with foreign bodies in the respiratory tract, and was able to operate just as easily and without any more discomfort to the patient. (4) Accidents due to hemorrhage. He recalled the case of a man, forty years of age, who, in an intoxicated sleep, had aspired a tooth bridge, which lodged in the left bronchus. While cocainizing the larynx, there was a hemorrhage from the lung. The bronchoscope was passed but the cough and constant flow of blood prevented any successful effort. A second attempt under fluoroscopic bronchoscopy was also preceded by a flow of blood, but the foreign body was found and removed. (5) Alarming symptoms, such as strangulation, might occur from the removal of a foreign body from below a stricture, thus releasing a large amount of pus. (6) On account of subglottic edema and the necessity for the use of a small bronchoscope, it might be very difficult to withdraw a foreign body through the subglottic space. The foreign body might slip off of the forceps repeatedly, so that it might be necessary to do a tracheotomy to secure its removal. Subglottic edema resulting from the use of too large a bronchoscope, or from the repeated passage of one, might necessitate intubation or tracheotomy within a short time after the examination was made.

Dr. Harris P. Mosher, Boston, Mass., would modify Dr. Jackson's postulate regarding the use of general anesthesia in esophageal examinations. He had had no mishaps in tracheal work, and in two esophageal cases.

in the early days of esophagoscopy. The esophagus was curetted, became infiltrated, an abscess followed, with fatal result. He did not feel, however, that general anesthesia was as dangerous in esophageal work as one would infer from Dr. Jackson's book. He would like to add another postulate, namely, "that no esophageal examination is complete unless esophageal ballooning is employed."

Dr. George L. Richards, Fall River, Mass., cited a case in which a child, eight years old, had a metal pencil point in the right lower bronchus. The specialist in charge made an unsuccessful attempt to remove it with the Killian-Brunings instruments. A second attempt was made by a gentleman of considerable experience, who worked an hour without being able even to grasp it, using the Jackson instruments. The x-ray showed just where the object was, but it could not be grasped. At a later date another attempt was made, more than an hour being consumed, when, without much warning, the respiration became bad and the boy died on the table. At autopsy the pencil-point was found pushed down to the pleura.

Dr. J. W. Jervey, Greenville, S. C., referring to Dr. Jackson's postulate in which the time of operation in children under five years of age was limited to twenty minutes, hoped that an extra five or ten minutes might be added for the benefit of those less expert than the essayist. Various handicaps might be encountered in the course of the operation which would make such an extension of time necessary. Mucous and blood sometimes had to be removed, great gentleness and care had to be exercised, and sometimes it was necessary to locate a foreign body which had not been located by x-ray, and this alone would consume fifteen minutes.

Dr. Richmond McKinney, Memphis, Tenn., was glad to have an opportunity to express his approval of Dr. Jackson's advocacy of doing broncho-esophagoscopy, whenever possible, without general anesthesia. He had noticed in the current issue of the *Journal of Laryngology*, that Hill, in reviewing Dr. Jackson's recent book on broncho-esophagoscopy, had criticised very unfavorably the position taken by Jackson that most broncho-esophagoscopies can be done very satisfactorily without general anesthesia. Hill advocated the use of chloroform, which certainly would not meet with approval on the part of American broncho-esophagoscopists. English laryngologists generally seem to favor chloroform in this kind of work. The speaker had lately been doing broncho-esophagoscopy practically altogether without general anesthesia, and recently had removed an orange seed from the trachea of a child one year of age, and a large sweater button from the esophagus of a child twenty months of age, with no anesthesia of any kind, and apparently without discomfort to either patient, and with no difficulty to himself. He believes general anesthesia to be the cause of many accidents in broncho-esophagoscopy. His personal experience had been that the removal of foreign bodies from the esophagus is much more dangerous than where the foreign body is located in the trachea or one of the bronchi. In one case of removal of a large metal overall button from the esophagus of a child of two years of age, which he had already reported, there was some traumatism of the mucous membrane back of the larynx, and although the attendants in the hospital were warned of the possibility of edema, and told to advise him should the child develop symptoms of asphyxiation, the patient

was permitted to slowly die from this cause, when a tracheotomy probably would have saved the child. Under any and all circumstances, broncho-esophagoscopy deserved the exercise of the greatest care to avoid traumatism, and should the foreign body not be secured within a comparatively few minutes after manipulation is begun, it was better to postpone further efforts until another day, rather than to subject the patient to the attendant danger, especially when general anesthesia was used.

Dr. Thomas Hubbard, Toledo, Ohio, had experimented a few years ago with a snare for closing a safety-pin, and had found that it could be done, but cautioned against this method, as it might engage in such a manner that it could not be released. The curved hook was unsafe in bronchoscopic work. The right-angle hook was safer, as it could always be released. The rule held good in all endoscopic operations: Never grasp, or rather never get tangled up with, a foreign body in such a manner that prompt release cannot be effected. Progress in this art tended toward simplified instrumentation.

Dr. Jackson, in closing the discussion, quite agreed with Dr. Imperatori as to the value of these investigations. If deaths on the table were frequent, bronchoscopy would not hold the place it does as a life-saving operation with an exceedingly low mortality, if considered apart from the condition for which it is done. Therefore, the determination of the cause of each and every death became of paramount importance. If Killian's first bronchoscopy had ended as did this case, bronchoscopy would probably not be performed to-day. Fortunately, the unfortunate cases were not the first cases. Neither Dr. Patterson nor the speaker had had a death on the table such as that described by Dr. Imperatori. Possibly their turn had not yet come; but in any event, even he, the speaker, could not speak from experience. Theoretically, the chief causes of sudden death on the table during bronchoscopy would be asphyxia due to cutting off all the air in the case of using a bronchoscope without side openings, and the anesthetic. The use of excessively large tubes he had always considered dangerous. Any kind of anesthesia rendered it difficult to restore arrested cardiac or respiratory action arising from any cause whatsoever. The experimental data of Dr. Imperatori were important, and his deductions seemed to the speaker to be warranted. All the points made by Dr. Forbes deserved especial emphasis.

Dr. Mosher had added an important postulate with regard to esophageal ballooning. Dr. Hubbard's postulate was a very important one and should be added to the list. Others could be worked out from the discussion if time permitted. The point raised by Dr. Jervey, with reference to extending the duration of the operation, was a very important one. Dr. Richards had cited a case in which the operation was prolonged until the patient died. The criticism of Dr. Jervey expressed what all had felt at times. Success seemed so near that one wanted to keep on a few minutes longer; and precisely therein lay the danger. The question was when to stop and wait for another day. As many fifteen or twenty-minute bronchoscopies as needed might be done without harm, whereas one of an hour might be fatal. If a patient was asphyxiating from the foreign body it must be gotten out, by tracheotomy or whatever means necessary, in order to preserve the patient's life; but in most other cases there

was no urgent need for immediate removal, and it was better to desist and try again. Success might be prompt at the next attempt. He was glad to have Dr. Hurd's endorsement as to the needlessness of an anesthetic for esophagoscopy for foreign body.

DR. IMPERATORI, in closing the discussion, advocated the use of atropin, previous to bronchoscopy. The experience of the different speakers seemed to show that the hypothesis which he had advanced could be translated as a fact, by further investigation, and hoped that at some future meeting the opportunity would be extended to him to present a completed study.

Diagnosis and Treatment of Syphilitic Affections of the Acoustic Nerve, With Special Reference to the Use of Salvarsan. DR. GEORGE M. DAVIS, New York City.

(Published in the August, 1916, issue of THE LARYNGOSCOPE.*)*

DISCUSSION.

DR. NORVAL H. PIERCE, Chicago, Ill., said the diagnosis of syphilis of the auditory apparatus should not cease with the tuning-fork examination. In every case giving the picture of syphilis of the auditory apparatus, with or without a history of chancre, the cerebrospinal fluid should be examined. With or without negative or positive Wassermann from the blood, the cerebronspinal fluid should be subjected to the Wassermann test. It was a good practice to give liberal doses of salvarsan in all suspected cases, beginning, of course, with a minimal dose. In the Illinois Eye and Ear Infirmary, with or without a history of luetic infection, with negative Rinné, both air and bone conduction being diminished, with lowering of the tone-limit, without the history of any disease which usually produces degenerative neuritis, a series of patients were subjected to the examination of the cerebrospinal fluid. The majority showed positive Wassermann when the cerebrospinal fluid was examined. Salvarsan had not greatly changed the prognosis over that given by the older methods. It depended entirely upon the process which produced the auditory symptoms—whether it was merely a hyperemia at the beginning of the infection, or a degeneration of the axis cylinder of the nerve—and the time at which the treatment was begun. The prognosis, in other words, was in direct ratio to the time of the onset and the beginning of the treatment. He had yet to see an old case, with considerable degeneration, make material improvement either with salvarsan or with mercury. In early cases, where the degeneration was slight, and where interference with audition was slight, a great deal could be accomplished with salvarsan or mercury. He had seen but one case in which the auditory symptoms were made much worse by the use of salvarsan. Another dose had been beneficial.

DR. ARTHUR B. DUEL, New York City, in opening the discussion, said: "It is impossible to adequately discuss so vast a subject in so short a time. I should feel that it had not been properly presented unless I brought out the essential points of several monographs giving the results of the work done by Swift and Ellis at the Rockefeller Institute.

"Some years ago the rapid succession of three or four cases showing intense manifestations of syphilis involving the eighth nerve, and in some cases other cranial nerves, early in the secondary stage, following

the use of salvarsan, led me to look up the literature of the subject. It was just at the time when the enthusiastic use of salvarsan everywhere had stimulated closer observations of all syphilitic manifestations.

"Although the subject of cerebral syphilis had engaged the attention of many observers in Italy, Germany, France, England, and America, even as far back as 1650, it was only since salvarsan had been exploited that it had been vigorously discussed. This was partly due to the serious consideration of the question whether or not the administration of salvarsan was the real cause of some of the cranial manifestations, rather than the syphilis. Vigorous discussion *pro* and *con*, by Benario, Ehrlich, and score of others, has stimulated a very careful observation of the cases and has led to a much better position regarding the diagnosis and treatment of all syphilis.

"Perhaps the most important result, so far as otologists are concerned, has been the definite emphasis of one point, *i. e.*, that syphilitic signs in the eighth nerve, as in any other cranial nerve, really mean *cerebrospinal syphilis*—a most dangerous form; a most difficult form to eradicate; and, one requiring the most skillful laboratory examinations at frequent intervals, accompanied by the most careful management in its treatment.

"For instance, it has been very definitely shown that these local foci in the brain (involving any of the cranial nerves) may become latent, as a result of inadequate dosage, and only manifest themselves after considerable periods. The presence of these isolated areas can be demonstrated by adequate laboratory examinations, and the proper treatment of them may save most important functions, even the life of the patient.

"It follows, then, that the discovery by us of these early lesions in the auditory apparatus should not be followed by casual or inadequate therapeutic measures.

"We owe it to our patients—and to our reputations—either to acquaint ourselves with the very latest work in diagnosis and treatment, with control tests to discover if the disease is eradicated—or to send them to experts who will do so.

"Ellis and Swift, at the Rockefeller Institute, have done some most exact work on the subject. The evidence of their investigations would seem to show, that, for a disease which is responsible for so much human suffering and death, and for which we have *perfectly definite specific treatment*, the majority of cases are treated in a most inadequate and really haphazard way. Doubtless most of you are familiar with their published monographs, but if not, I do not think I am going too far to say that you are unfair to both yourself and your patient, when you treat an otitic syphilitic manifestation without having acquainted yourself with their methods of examination and treatment. They are not too difficult for anyone to adopt, and the satisfaction of knowing we have done all in our power to relieve such an infection should stimulate us to familiarize ourselves with the technic, or to refer our cases to those who have done so.

"I append the titles of the published monographs of these investigators.*"

*Ellis, Arthur W. M.—"Secondary Syphilitic Meningitis." Jour. Am. Med. Assoc., 1912, LIX, 1263-1267.

Swift, Homer F., and Ellis, A. W. M.—(1) "The Intensive Treatment of Syphilis." Jour. Am. Med. Assoc., LIX, 1251-1254; (2) "The Cerebrospinal Fluid in Syphilis." Jour. of Experimental Medicine, 1913, XVIII, No. 2;

DR. PIERCE wished to correct Dr. Canfield's impression concerning the ill effects from the use of salvarsan. His contention was that the ill effects were more likely due to inadequate doses. It was very necessary in auditory syphilis to precede the injection of salvarsan with the administration of calcium iodide, and then begin with a minimal dose of salvarsan.

DR. GEORGE W. MACKENZIE, Philadelphia, Pa., referring to the question of shortened bone conduction, associated with a relatively normal air conduction found by Dr. Davis as an early sign of syphilis, said in his experience the bone conduction is never shortened without a proportionate amount of shortening of the air conduction. As pointed out by Dr. Davis, some authors had found the Rinné positive and others had found it negative. The answer to this apparent contradiction in findings was due to the fact that those who found the Rinné positive were examining cases of mild grade nerve deafness, with bilateral involvement, while those who found the Rinné negative were examining cases of more pronounced deafness or unilateral cases, or cases with unequal intensity or deafness on the two sides.

In a case of unilateral inner-ear or nerve deafness, the typical findings showed a positive Rinné when the deafness was of slight or moderate degree. Eventually if the process increased to total deafness the Rinné became negative; that is, no air conduction and a tolerable degree of bone conduction. This bone conduction, however, was not present because of any real hearing in the affected ear, but was due to a cross-conduction from the opposite side. The more intelligent patient recognized that though he appeared to hear the fork over the affected ear, he referred the sound to the unaffected ear. So that in this way from the normally positive Rinné (with air and bone both shortened) that was typical of slight degrees of involvement up to the complete deafness with negative Rinné, all varieties of Rinné might be found.

In the case of bilateral involvement of inner ear or nerve of equal intensity, the Rinné remained positive on the two sides throughout, except in the case of complete bilateral deafness, when it was neither positive nor negative.

In bilateral deafness the long bone conduction was more pronounced than in unilateral deafness, and though there was always some borrowed bone conduction from the opposite side, there was less to borrow in bilateral cases.

Tinnitus could be present in a case of total nerve deafness of syphilitic or other origin. Such cases he had seen and reported. This was to be explained by the presence of a destructive lesion in the inner ear associated with an irritative lesion in the nerve.

He emphasized the importance of the Galvanic test in the study and diagnosis of inner ear and nerve deafness. It was the only available method of differentiating between disease of the inner ear and the eighth

(3) "The Treatment of Syphilitic Affections of the Central Nervous System with Especial Reference to the Use of Intraspinous Injections." Archives of Internal Medicine, 1913, Vol. 12, 331-345; (4) "Involvement of the Eighth Nerve in Syphilis of the Central Nervous System." Jour. Am. Med. Assoc., 1915, LXIV, 1471-1477.

Swift, Homer F.—"Intraspinal Therapy in Syphilis of the Central Nervous System." Jour. Am. Med. Assoc., LXV, 209-314.

nerve; besides, it was a valuable test for determining whether the pathologic process was taking a favorable or an unfavorable turn by comparing the findings from time to time. It had the added advantage of being a therapeutic agent.

Spontaneous Recovery in Cerebro-Spinal Meningitis of Otitic Origin, With Report of a Case. DR. SAMUEL MCCULLAGH, New York City.

(Published in the December, 1916, issue of THE LARYNGOSCOPE.*)*

The Relief of Otitic Meningitis by Sub-Temporal Drainage, With a Report of Two Cases of Recovery from Streptococcus Meningitis by This Method. DR. EUGENE A. CROCKETT, Boston, Mass.

DR. EUGENE A. CROCKETT, Boston, Mass., presented this report, as a continuation of a former contribution, entitled, "The Treatment of Acute Lepto-Meningitis of Otitic Origin in Early Operation and Subdural Drainage, with a Report of Six Cases." The writer now reports three cases of acute streptococcus meningitis operated on by his method, with recovery, one operated upon by himself, and two by his assistants at the Massachusetts Eye and Ear Infirmary. In addition to these three successful cases, he operated, during the same period, on two cases in which the patients died after operation. He had refused to operate in three other cases which were obviously moribund when seen. The operative recoveries in the last year were fifty per cent of the cases treated, which was probably accidental and unusually high, the twenty per cent of recoveries given in his first paper being more nearly correct.

Certain points in the operative technic of these cases make or mar the success of the operation. In the earlier operations his principle difficulty was in the handling of the cerebral hernia which instantly forms after the dura is opened, in cases of increased intra-cerebral pressure. Attempts to reduce this hernia often led to laceration of the brain, the operative results being poor in consequence. The opening in the dura should be small, not over one inch or one and a half inches, and the decompression opening should be made low and as near the upper border of the external auditory canal as possible. The dura should be opened at the bottom of the bone opening. The amount of pressure in the brain can be gauged by the finger tip pressed against the dura. The lumbar puncture is made, by an assistant, previous to opening the dura, the operator keeping the tip of his forefinger on the dura in the compression opening. The cerebro-spinal fluid is allowed to run from the lumbar opening until the intra-cerebral pressure is distinctly subnormal. According to circumstances, 30 to 40 cc. may be withdrawn. The intra-cerebral pressure being reduced, a slit is made in the dura and the drain is inserted between the dura and the pia, along the top of the petrous portion of the temporal bone. This is passed along nearly to the internal auditory meatus, about an inch or an inch and a half. The writer has not attempted to sew the dura, nor has he attempted to approximate the external skin flaps too carefully. Not much more than fifteen minutes need be consumed in this operative procedure. Every minute over that counts materially against the patient's recovery. The subdural drain may be left in for a week or ten days. The important point in the after-treatment of the cases is the free use of lumbar punc-

ture. A marked increase of cerebral pressure prevents free drainage from the subdural drain. Where the patient presents cerebral pressure symptoms, such as headache, Cheyne-Stokes respiration, delirium, or convulsions, lumbar puncture is done twice a day, if necessary, 20 to 30 cc. of fluid being drawn off each time. This has reference to adult cases. Recovery undoubtedly depends upon the unhesitating resort to the free use of lumbar puncture at the proper time.

DISCUSSION.

DR. WENDELL C. PHILLIPS, New York City, had thought, until he heard Dr. McCullagh's paper, that recoveries called spontaneous were due to some recuperative power on the part of the patient. Cases had been reported from time to time of recovery having taken place in cases in which there was no doubt as to the diagnosis. He had seen such a case recently, under the care of Dr. Friesner, on his service at the Manhattan Eye and Ear Hospital. He called attention to two cases recently reported in the *Journal of the American Medical Association*, in which dural drainage was established by lumbar laminectomy. Both cases recovered, although the cerebrospinal fluid gave a positive culture. He was still somewhat skeptical as to whether the operation had very much to do with the recovery. Lumbar puncture, in his opinion, had much to do with recovery in many of these cases.

DR. EWING W. DAY, Pittsburg, Pa., had been working at this problem ever since he had been a member of the Society, and had tried the various new methods which had been presented from time to time. Despite the general skepticism regarding the subject, he hoped that Dr. Crockett's method would stand the test. Dr. Crockett was to be congratulated upon having these cases, and upon the procedure detailed.

The symptoms in meningitis were those which come from pressure and from the poisoning of the blood stream. In Dr. Crockett's former paper, doubt had been cast upon the diagnosis; the cases now reported were undoubtedly cerebrospinal meningitis. Many mild cases, the speaker believed, were never recognized, only the most intense and the grosser ones being known. This was contrary to what he had stated a few years ago.

The important thing in connection with meningitis was the cerebrospinal fluid stream, the method of its flow and the direction it follows. This was given in detail, and the experiments of Weed, of Johns Hopkins, with coloring matter injected into the brain, mentioned. In the majority of cases, he believed, infection takes place above the base, the upward flow of the cerebral fluid tending to keep it from the base. When the fluid was drawn off from below, if the force of the stream going up over the cerebrum was sufficient to hold the infection up, naturally a sterile fluid would be obtained. The course of the infection might be on the surface of the brain or be absent, but all postmortems showed an immense volume of pus at the base of the brain, where large arachnoid spaces are located. This condition seemed to be common in all cases of fatal meningitis.

Dr. Crockett had certainly added greatly to the technic of sub-temporal drainage, and the repeated tapping to reduce the pressure was a distinct advantage. He cited a case, reported before this Society, in which the

patient recovered. There was no doubt about the diagnosis so far as could be determined by present methods of diagnosis. Two years later the patient returned with a re-filling of the cerebellar abscess, and the condition progressed to death. Just at that time Barr, of Edinburgh, suggested washing through the ventricles to a lumbar canula. The speaker tried this plan in the case mentioned, when he knew that the patient would die. All preparations were made, and a solution of methylene blue was injected, to see where it went. It was put in the lateral ventricle and came out with the lumbar canula. Autopsy showed that the whole of the cerebral area was colored perfectly blue, excepting an area where the former dural drainage had been done. Microscopic examination showed that there had been an inflammatory process in this area which was not stained. That case, which he had reported as cured, was one in which the infection had not gone to the base and was of limited area. In another case, in which he employed the Haynes operation, in endeavoring to drain the cistern in front of the medulla, which could not be reached by this method. Some fused wire was twisted into a spiral form, three or four strands being used, and, by cutting away the petrous portion of the bone, he was able to reach the point, just over the basilar process, which he had not been able to reach by the Haynes method. After several days the patient died, and at autopsy it was found that there was less pus in the cisterna magna and other cisterns than in most cases.

Dr. E. B. Dench, New York City, said that his first subdural drainage for meningitis was done unconsciously. He had operated upon the patient for a temporo-sphenoidal abscess, and not finding the abscess had inserted a drain into the subdural space. The patient recovered. This was the first time in which a decompression operation had been performed for a leptomeningitis. There was another sort of a decompression which he had found of value, namely, the exposure of a large area of dura without opening the dura at all. As great an authority as Ballance had said that decompression could not be effected without division of the dura. The speaker had been of the same opinion until he had a case at St. Luke's Hospital in which an undoubted meningitis was present, as proved by lumbar puncture. The patient was blind, and presented all the characteristic symptoms of meningitis. In this case a mastoid operation was performed, with extensive exposure of the dura. This patient made a complete recovery. In a second case at St. Luke's, a patient had all the clinical symptoms of meningitis, including stiff neck, Kernig sign, headache, and a temperature of 104. Upon spinal puncture, the cell count of the spinal fluid was 2500. At Dr. Dench's suggestion, one of his associates performed a mastoid operation and exposed a large area of dura in the middle fossa. All the symptoms of meningitis disappeared, the spinal fluid became normal, and the boy made a complete recovery.

These cases convinced him that a certain amount of decompression was obtained by exposing a large area of dura without opening it. He had had only one recovery from true decompression in meningitis, but in numerous cases this procedure had undoubtedly prolonged life. Any operation which prolonged life for even four or five days, was a step in the right direction and was an indication that it might be possible, by improved technique, to bring about a recovery.

Referring to Dr. Day's remarks concerning the Neumann operation, Dr. Dench mentioned one case which had been operated on by one of his assistants, Dr. Perkins, in which the patient made a complete recovery. This case was operated on very early, the diagnosis being made practically upon the cytology of the spinal fluid. In other case, operated upon by the speaker by a similar method, the patient had died. This case was operated on a little later in the course of the disease. Accumulated personal experience led the speaker to believe that the Neumann operation, in order to be of value, must be performed very early—as soon as the cytology of the spinal fluid was indicative of meningitis. The speaker emphasized the fact that it was only by persistently operating upon these cases that the profession would be able to formulate, ultimately, the best procedure.

He had had considerable experience with the Haynes operation, but did not think it offered as much hope of success as the sub-temporal drainage proposed by Dr. Crockett. He did not agree with Dr. Crockett concerning the advisability of exposing only a small area of dura. He preferred, personally, to expose a dural area of two or three inches. Latterly, he had not employed any drain, but had trusted to the escape of the cerebro-spinal fluid into the soft tissues and its absorption there.

Concerning the occurrence of a hernia cerebri, attention was called to the fact that if the dura was perforated by simply scraping through the dura with a scalpel the pia would not be injured. A director could then be passed through the opening thus formed and the dura divided without injuring either the pia or the brain substance. If the pia was not divided, there was comparatively little danger of a hernia cerebri. In some cases the pial vessels were greatly engorged, and when this condition was present the application of a gauze compress moistened in a 1-1000 solution of adrenalin chlorid would contract the vessels, render the tissues firmer, and render their liability to injury much less possible upon manipulation.

Dr. J. A. Stucky, Lexington, Ky., had employed the method of Dr. Crockett in three cases of serous meningitis. A few years ago he was criticised severely for claiming that there was such a thing as a localized serous meningitis. His son had since operated by this method on a case with double mastoiditis. There were ten or fifteen spinal punctures in this case. He agreed with Dr. Crockett that enough fluid should be withdrawn to relieve the pressure. The operation was a step in the right direction, and was justified. Drainage with rubber tissue or rubber tubing, as advocated by Ballance, was better than with gauze.

Dr. Joseph C. Beck, Chicago, Ill., said the term, "spontaneously cured," was not properly applied to these cases because they had had the decompression operation and spinal puncture. The night before leaving home he had performed an operation such as Dr. Crockett described. The patient was practically moribund before operation. The drum was perforated in one ear, and from this came a discharge. He did a mastoid operation on the affected side, and found, leading up to the tegmen, an area of inflammation. He followed Cushing's method, making two linear incisions and a very imperfect cross incision into the dura. Through one of the larger incisions he passed a fine drainage tube, leaving the skin incisions wide open. He then made a spinal puncture.

He had no time to make an examination of the fluid up to this moment, but the next day as soon as he made another spinal puncture the child rallied. The temperature fell to 100, and he was on the way to recovery, which he hoped would be complete. He had had one case in which the patient recovered after the Haynes operation. He had used the fascia lata in covering a large area of dura, with success.

DR. S. MACCUEN SMITH, Philadelphia, Pa., had not seen a case of purulent meningitis recovery after operation by any method, no matter what the procedure. The Haynes operation, although giving hope of relief, at first, had proved totally unsuccessful and had been practically abandoned. He would have renewed courage in treating some of these cases by the method proposed by Dr. Crockett.

DR. NORVAL H. PIERCE, Chicago, Ill., had not changed his position in this matter. He had yet to see a case of any severity, in which the bacteria were recovered from the cerebro-spinal fluid and cultured, get well. In this connection, he cited a recent case, in which the patient had otitis media which continued for six weeks, without external symptoms. The ear continued to discharge, and the general condition of the patient became less favorable. He operated, finding very little change in the mastoid. There was some degeneration in the terminal cells, and some change going on toward the labyrinth. All went well for three weeks, then there was vomiting, vertigo, sub-febrile temperature, rising to 102 in the afternoon, headache, slightly stiff neck, and doubtful Kernig. The question of operation came up immediately. Spinal puncture was made, yielding a turbid fluid, under considerable pressure. There was micro-organisms in a smear, but culturally the fluid remained sterile. The symptoms became very much improved after this lumbar puncture, and remained so for a few days, when the temperature and headache returned, and the vertigo became worse. The lumbar puncture report was thirty cubic centimeters removed; pressure, 138. Improvement again followed. After seven lumbar punctures, extending over ten days, the symptoms disappeared and the patient recovered. He could cite similar cases without labyrinthine symptoms, with all the classical symptoms of cerebro-spinal meningitis, treated in the same way, by repeated lumbar puncture, with recovery. It was a serious question whether the dura would be incised around this infected area.

DR. DAY, continuing the discussion, said it did not follow that there was inflammation in the arachnoid spaces, as he had found in three cases. If the Haynes operation would not cure these cases, why would lumbar puncture do so?

DR. MCCULLAGH, in closing the discussion, said, regarding the non-viability of the organisms in recovered cases, that Dr. Dwyer claimed that growth failed in many of these cases because of too-acid media. Recovered cases, it seemed to the speaker, suggested the possibility of self-limitation in diffuse purulent meningitis, just as in the epidemic type where there was always a percentage of cases which recovered spontaneously. In view of Dr. Day's observations, it was a question whether operative measures did more than add to the drainage.

Auditory Re-Education. DR. THOMAS J. HARRIS, New York City.
(Published in the September, 1916, issue of THE LARYNGOSCOPE.*)*

DR. FRANK E. MILLER, New York City, in opening the discussion, said: "This splendid paper of Dr. Harris brings out in many instances points which I have tried to establish in my attempt to standardize voice and sound-matters. I deem it a great honor to have the privilege of opening the discussion of so valuable a paper.

"It is my purpose to bring out a few points for further discussion which I hope will be interesting for further study.

"According to Dr. Irving W. Voorhees, both Dr. Alexander and Dr. Neumann, of Vienna, make the statement that pathological findings substantiate only seven per cent of so-called oto-sclerosis cases.

"My processes and methods of dactylization consist in breaking up adhesions in the region of the apex and base of the Eustachian orifice, about the palato-pharyngeus and pharyngeal muscles, and in separating the levator palati from the tensorpalati; also massaging the ascending pharyngeal artery and supra-tonsillar region, thus giving at certain points in the dome of the pharynx indirect stimulation to cochlea, vestibule, otic and Meckel's ganglia. Often, through the aid of this manipulation, I have been able to increase seven to twelve seconds' duration of bone conduction to twelve to fifteen seconds, and aerial conduction of twelve to fifteen seconds to thirty-two to forty-two seconds.

"Again, in many cases the suppuration dries up and disappears in fourteen days after dactylization.

"Now let us turn our attention to the subject of mechanical methods of treatment, contrasting principally the Maurice and the Meyer-Roman machines.

"First let us point out that in 98 carefully reported cases with Maurice's first and best imported machine the results were far inferior to those attained by the Meyer-Roman instrument.

"The Maurice machine is only capable of producing a series of vibratory changes which in themselves are not sufficient to effect a cure in every case.

"Realizing this deficiency, I have tried to set down a few of the salient points essential for an efficient machine; also what we are capable of producing with the Meyer-Rowan apparatus.

"We must have a machine that will, *First*, By mechanical vibration increase the blood supply of the part, which in turn, of course, increases its nourishment and allows for excretion. *Second*, Produce a natural form of sound vibration which may be varied to attune the tympanum without irritation. *Third*, By proper manipulation be able to break up any partial tendency to ankylosis. *Fourth*, Produce any amount of vibratory pitch, or resonance which is judged acceptable for raising the efficiency of the mechanical working parts of the hearing apparatus. *Fifth*, Produce any amount of vibration or stroke from 10 to 300 vibrations per second with or without mechanical pressure or suction. *Sixth*, Capable of use for syphoning the Eustachian tube in order to release lymphatic secretion, which is one of the principal causes of middle ear deafness. *Seventh*, By an experienced manipulation and proper knowledge of otology all these factors can be blended or used alone to produce effects on the different

component structures. *Eighth*, Have proper types and sizes of catheters that will pass into the Eustachian orifice without trauma. *Ninth*, Produce suction or massage separately or with sound vibrations from either of four machines or their combinations at the pleasure of the operator. *Tenth*, Provide any amount of force as the case may require.

"These ten factors I have found incorporated in the Meyer-Rowan machine, and by proper scientific manipulation and knowledge of the anatomical and physical structure of the ear, have obtained some very striking results.

"It has been questioned as to whether the cellular tissues function or degenerate under treatment. This machine produces solely a stimulation of the parts which naturally, if applied properly, will tend to activate the cells and increase their tone and functionating power.

"The subject of auditory re-education comes to my attention. I believe its ineffectiveness and apparent failure by many is due not to its impracticability, but to the lack of sufficient study into the normal operation of the ear as well as the etiology of the pathological condition.

"Inasmuch as the laws of hearing are not known nor, as yet, been reproduced by any mechanical device, we must of necessity establish further new views and theories with which to try to accomplish this long desired end.

"The phonograph being a disc cannot transmit and translate sound of the correct intensity and pitch as produced by the voice.

"Some years ago I brought and submitted 23 personal cases to you for discussion, representing some of the principles to which I am still holding, in some measure.

"The external meatus can be inspected with the otoscope and the condition of the drum inspected, but its recording sensitiveness cannot be determined by inspection.

"To understand the physical properties of the drum, I might mention its possibilities in manner of response to various sound vibrations.

"The drum is a cuspoid, formed by the action of the two planes of forces, one sinister—the other dexter-gyrate, acting in opposition. The dexter-gyrate force decreases while the sinister force increases, until at the vertex the two forces are in equilibrium.

"Similarly, we have the laws governing the earth and the sun. The equilibrium position of the two forces result only after they have made two and a half turns; that is to say, it takes two and a half turns to establish equilibrium. The equilibrium point or vertex of the contact of the two curves makes the cuspoid. Thus the cuspoid is of such form that any sound reaching it conforms exactly to that part of the cusp upon which it is registered.

(To be continued.)